VOLUME XXXVI NUMBER THREE

# THE NATIONAL GEOGRAPHIC MAGAZINE

SEPTEMBER, 1919

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ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

To carry out the purpose for which it was founded thirty-one years ago, the National Geographic Society publishes this Magazine. All receipts from the publication are invested in the Magazine itself or expended directly to promote geographic knowledge and the study of geography. Articles or photographs from members of the Society, or other friends, are desired. For material that the Magazine can use, generous remuneration is made. Contributions should be accompanied by an addressed return envelope and postage, and be addressed: Editor, National Geographic Magazine, 16th and M Streets, Washington, D. C.

Important contributions to geographic science are constantly being made through expeditions financed by funds set aside from the Society's income. For example, immediately after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. So important was the completion of this work considered that four expeditions have followed and the extraordinary scientific data resultant given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures, evidently formed by nature as a huge safety-valve for erupting Katmai. By proclamation of the President of the United States, this area has been created a National Monument. The Society organized and supported a large party, which made a three-year study of Alaskan glacial fields, the most remarkable in existence. At an expense of over $50,000 it has sent a notable series of expeditions into Peru to investigate the traces of the Inca race. The discoveries of these expeditions form a large share of the world's knowledge of a civilization which was waning when Pizarro first set foot in Peru. Trained geologists were sent to Mt. Pelee, La Soufriere, and Messina following the eruptions and earthquakes. The Society also had the honor of subscribing a substantial sum to the historic expedition of Admiral Peary, who discovered the North Pole April 6, 1909. Not long ago the Society granted $20,000 to the Federal Government when the congressional appropriation for the purchase was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people and incorporated into a National Park.


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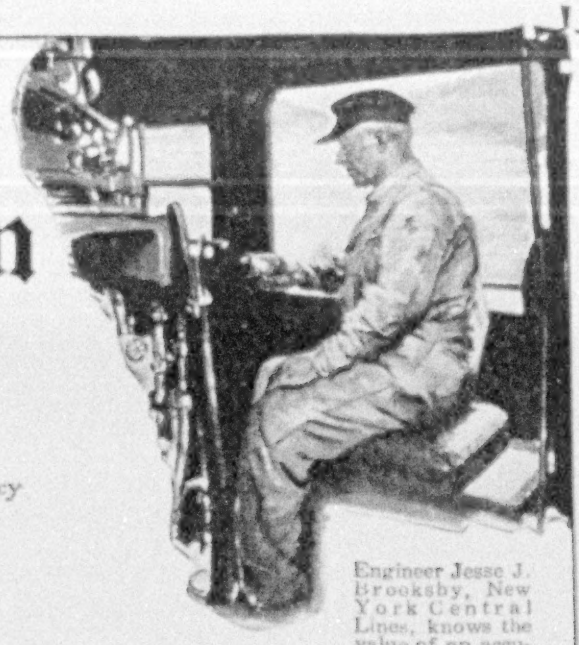
# Hamilton Watch

The Watch of Railroad Accuracy



Engineer Jesse J. Brooksby, New York Central Lines, knows the value of an accurate timekeeper in keeping on schedule. For ten years he's run his trains on Hamilton time.

## *Back of Every Time-Table*

To get in "on time," trains must keep close to schedule every mile of the way.

Railroad schedules are so complex these days, that to avoid confusion and delay trains must keep close to schedule every mile of the way.

For every train, on every time-table, there are dozens of men—dispatchers, conductors, engineers—who work with an eye always on their watches. They time their trains with the watches they carry. Were these watches inaccurate, time-tables would lose half their dependability and convenience. The Hamilton times most of the country's fast limited trains.

## Make Your Gift a Hamilton

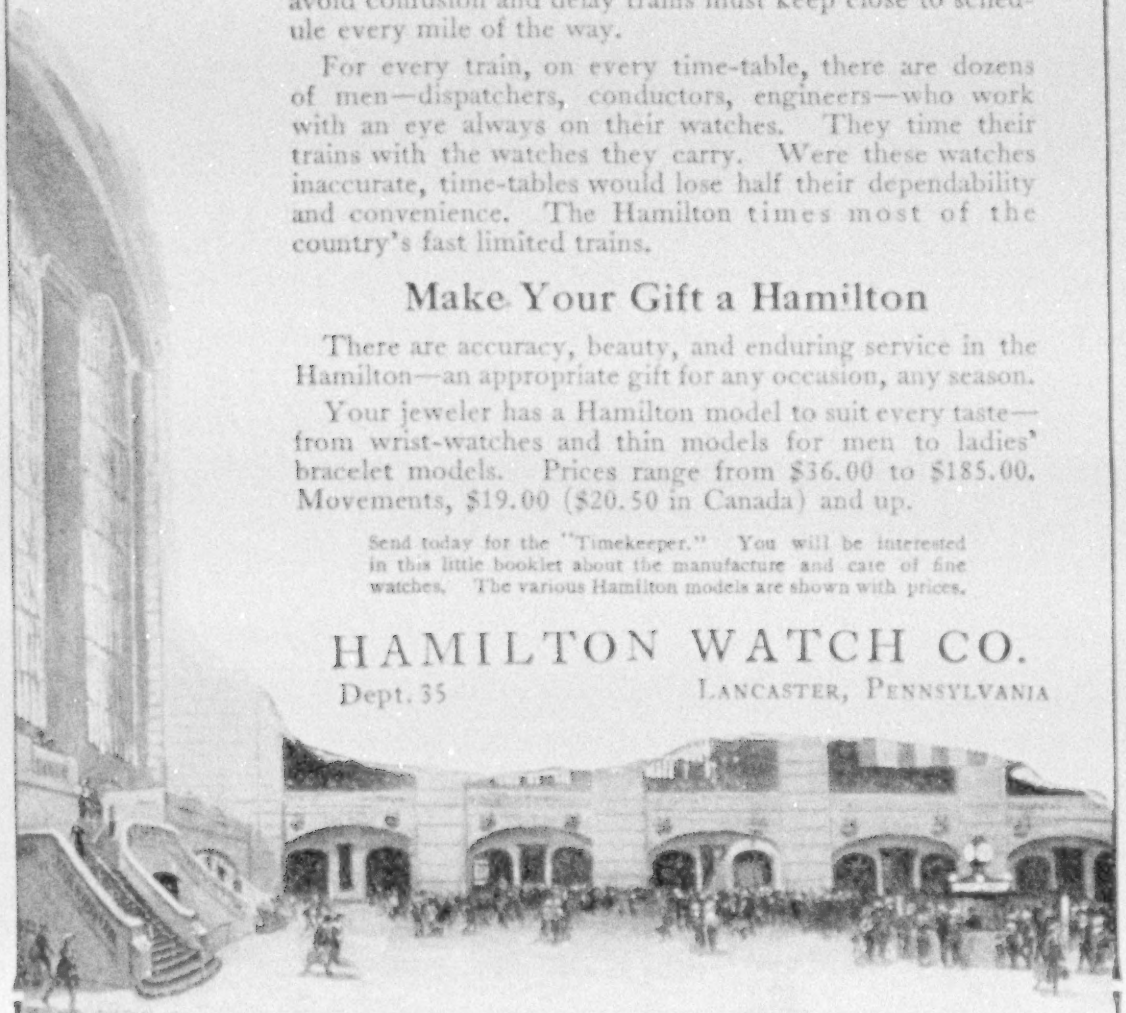
There are accuracy, beauty, and enduring service in the Hamilton—an appropriate gift for any occasion, any season.

Your jeweler has a Hamilton model to suit every taste—from wrist-watches and thin models for men to ladies' bracelet models. Prices range from $36.00 to $185.00. Movements, $19.00 ($20.50 in Canada) and up.

Send today for the "Timekeeper." You will be interested in this little booklet about the manufacture and care of fine watches. The various Hamilton models are shown with prices.

HAMILTON WATCH CO.

Dept. 35 LANCASTER, PENNSYLVANIA





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# AT THE FIRST DROP OF RAIN

*Obey that Impulse*

Put on Your

## WEED TIRE CHAINS

THE ONLY DEPENDABLE SAFEGUARD
AGAINST SKIDDING

AMERICAN CHAIN CO., INC., BRIDGEPORT, CONN.
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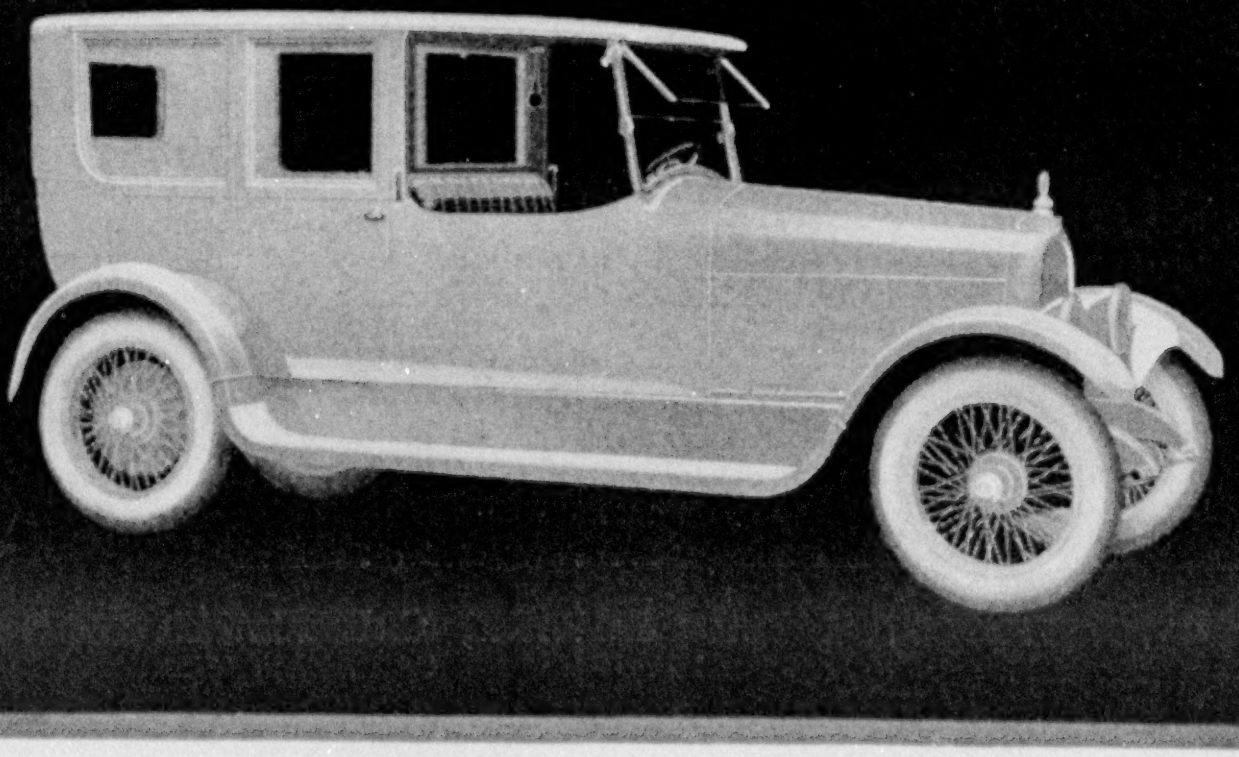
"Mention The Geographic—It identifies you"

# MARMON
# 34

Below is pictured an exact likeness of the Marmon Limousines sold to the French High Commission for the use of the General Staff. No greater distinction has been conferred on any American car.

NORDYKE & MARMON COMPANY

Established 1851 — Indianapolis, U. S. A.





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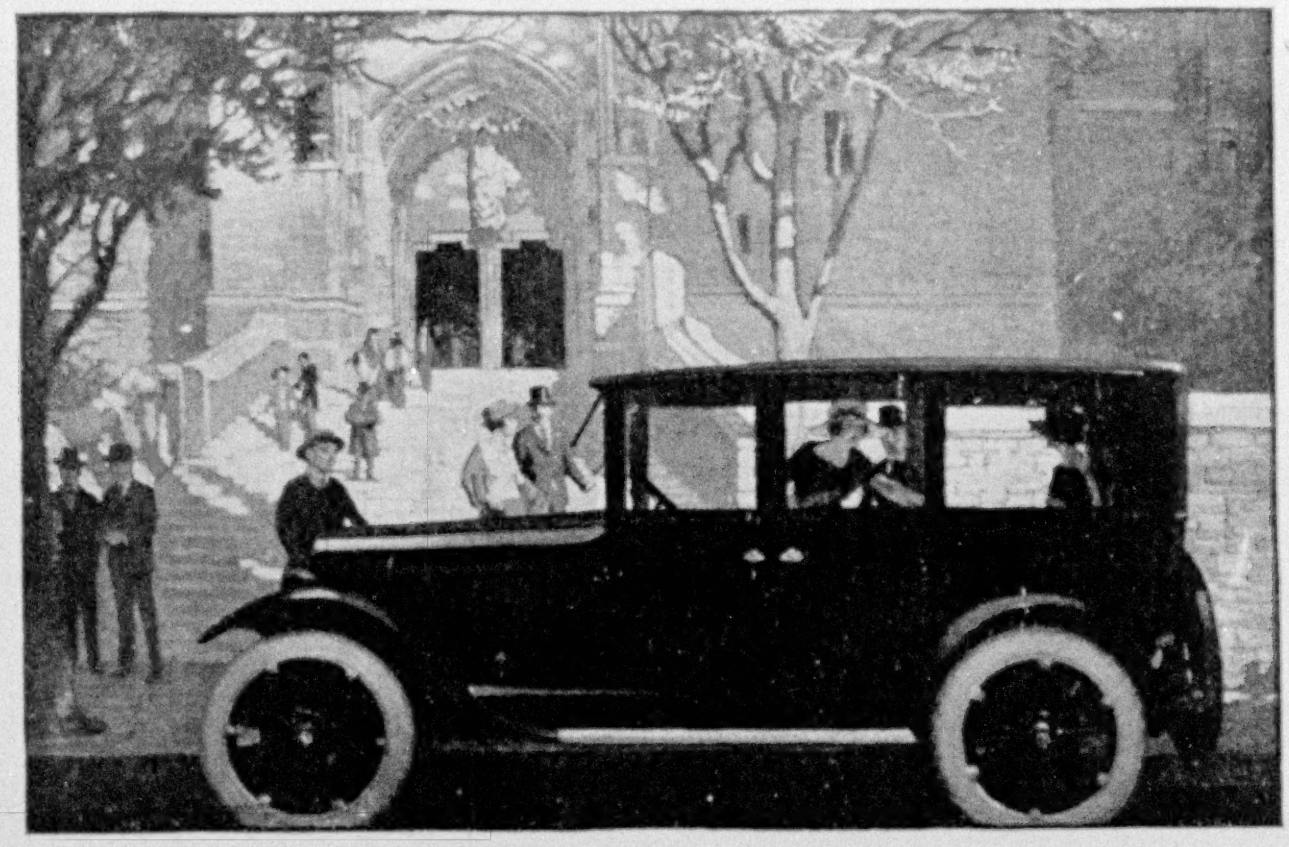
# CHANDLER SIX

*Famous For Its Marvelous Motor*



## THE MOST PLEASING NEW SEDAN

THE whole motor market offers no other new model more attractive than the Chandler Sedan of the new series Here is an exceptionally fine car, most graceful and dignified in design, luxurious in finish and appointments, big and comfortable and economical. It is the finest development of the closed car type, handsome in style, most substantially built and providing unusual service in any season and any weather

The high hood and radiator, characteristic of all the new series Chandler models; the permanent window posts; the four full-length doors, with all hinges concealed, the undivided front seat; the wide, deep cushions, and the beautiful silk plush upholstery are especially pleasing features.

The Chandler Sedan body is one of several attractive bodies mounted on the famous Chandler chassis, distinguished for its marvelous motor and sturdy construction throughout

**SIX SPLENDID BODY TYPES**

*Seven-Passenger Touring Car, $1795* *Four-Passenger Roadster, $1795*

*Four-Passenger Dispatch Car, $1875*

*Seven-Passenger Sedan, $2695* *Four-Passenger Coupe, $2595* *Limousine, $3095*

*All prices f. o. b. Cleveland*

*Dealers in all Principal Cities and Hundreds of Towns*

CHANDLER MOTOR CAR COMPANY, CLEVELAND, OHIO

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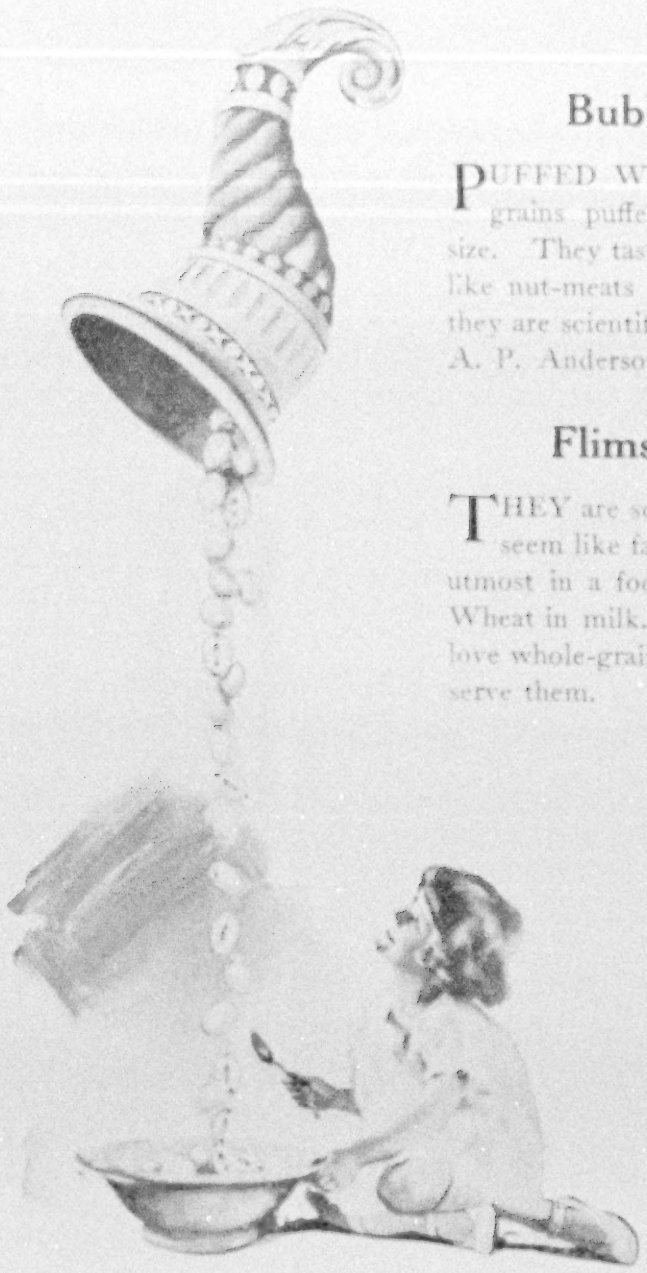


## Bubble Grains

PUFFED Wheat and Rice are whole grains puffed to eight times normal size. They taste like food confections—like nut-meats puffed and toasted. But they are scientific foods created by Prof. A. P. Anderson.

## Flimsy—Flavory

THEY are so thin, so fragile that they seem like fairy foods. Yet the very utmost in a food for children is Puffed Wheat in milk. If you want a child to love whole-grain foods this is the way to serve them.

# We Explode

## The Wheat, So Every Atom Feeds

THESE wheat bubbles are created by internal steam explosion. We cause in each kernel more than 100 million explosions—one to every food cell.

The purpose is to fit the grains for easy, complete digestion. And to make every element available as food.

So Puffed Grains are ideal foods for any hungry hour. Not for mealtime only, but between meals. Crisp and douse with melted butter and let children eat like peanuts.

Mix in every dish of fruit. Serve in every bowl of milk. Scatter like nut-meats on ice cream. Serve in soups.

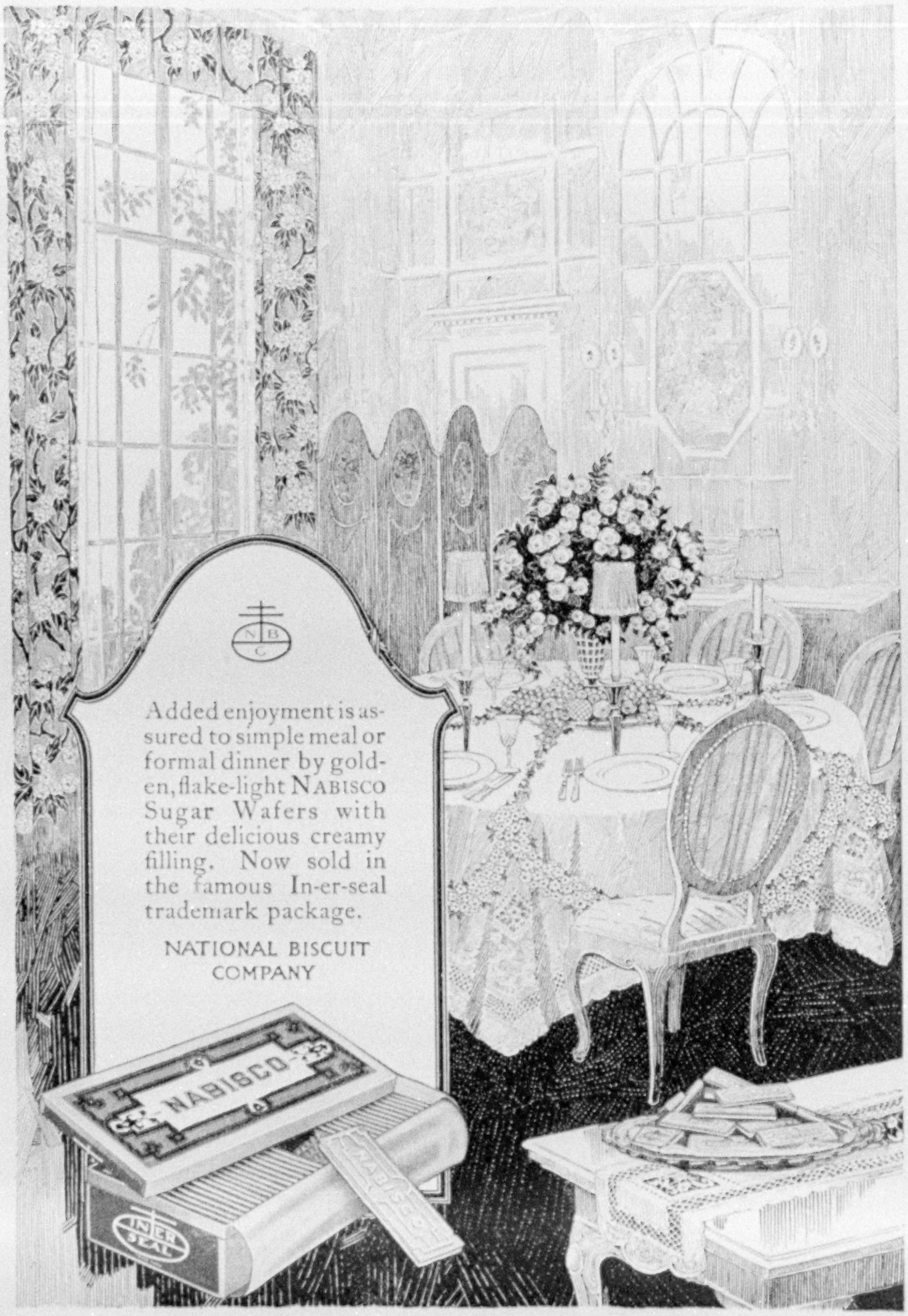
**Puffed Wheat  Puffed Rice**
**Corn Puffs**

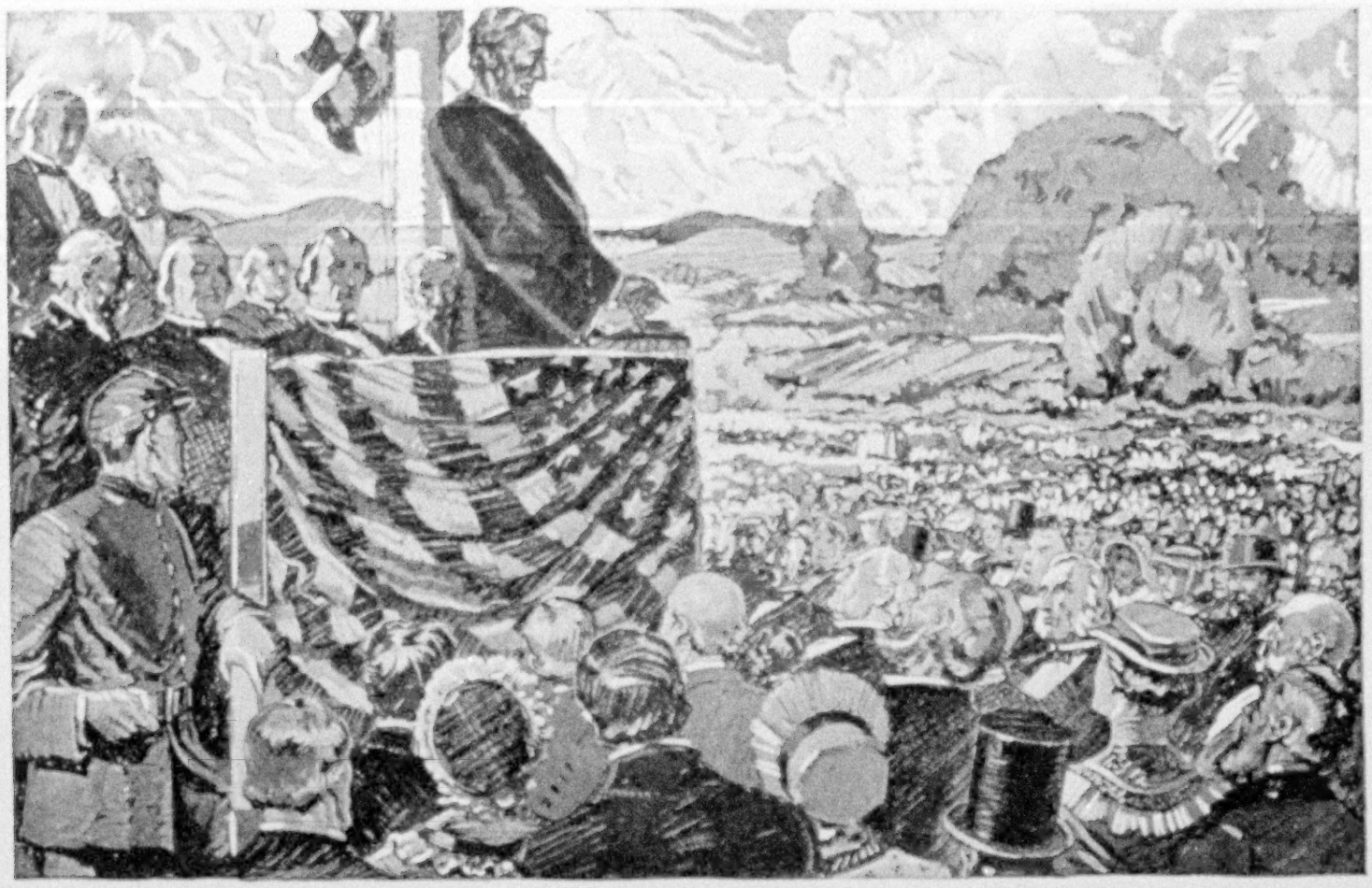
*All Bubble Grains—Each 15c, Except in Far West*

## The Quaker Oats Company

Sole Makers

(3181)


N B C
Added enjoyment is assured to simple meal or formal dinner by golden, flake-light NABISCO Sugar Wafers with their delicious creamy filling. Now sold in the famous In-er-seal trademark package.
NATIONAL BISCUIT COMPANY
NABISCO
IN-ER-SEAL



*Never can be forgotten those brief sentences*

WITH which President Lincoln dedicated the great field of Gettysburg to the nation. In that simple but immortal address can be read the spirit of a people united, indivisible forevermore. In the years which have intervened this spirit of union has been made stronger by vast industries of peace which have lightened labor and spread comfort and prosperity throughout the land. Foremost in the development of concrete, the Lehigh Portland Cement Company, serving the nation with wide-spread mills from coast to coast, looks forward to coming years with the hope of ever increasing service to the nation.

ALLENTOWN, PA.
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SPOKANE, WN.
New York, N. Y.
Boston, Mass.
Philadelphia, Pa.
Jacksonville, Fla.
Kansas City, Mo.
Minneapolis, Minn.
New Castle, Pa.
Omaha, Neb.
Pittsburgh, Pa.
Mason City, Iowa
Richmond, Va.

LEHIGH PORTLAND CEMENT COMPANY

*The National Cement*

LEHIGH CEMENT

"Mention The Geographic—It identifies you"

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# Superspun

REG. U.S. PAT. OFF.

*Formerly called Empire Wash Crepe*

This supreme silk for men splendidly justifies its name—Superspun—a master weave. It is made in many designs of rare beauty and its wearing qualities are remarkable. Other Empire Loomcraft Silks—all washable shirtings of distinctive pattern and enduring texture—are **Mellowspun, *Shapspun, *Guildcrepe, *Chateau, *Commodore Crepe, *Kingcloth.* (*Reg. U.S. Pat. Off.)

If you have your shirts made to order, ask your shirtmaker to show you his complete assortment of Empire Loomcraft Silks. The name is woven in the selvage.

If you prefer ready-to-wear shirts you can find them made of these silks at most of the better shops and the Empire Loomcraft label is in every shirt to safeguard you against inferior silks.

Empire Loomcraft SILKS

REG. U. S. PAT. OFF.

# General Motors Trucks

## —and Business Prestige

IT would be hard indeed to find a better example of the sort of prestige coveted by all high-class retail business than that of The Bailey, Banks & Biddle Company, the famous jewelers of Philadelphia.

Founded in 1832, this house is a Philadelphia institution. Through more than four score years it has been accorded the patronage of the fine old aristocratic families of America's first capital.

Nearly 100 years years ago The Bailey, Banks & Biddle Company sold its precious wares of jewels and plate in a quaint colonial shop and delivered them in a horse-drawn coach.

Today the company occupies a magnificent modern store, containing so extensive a collection of precious stones, jewelry, and objets d'art that it is one of the showplaces of Philadelphia.

And today The Bailey, Banks & Biddle Company is using for its delivery service five GMC Trucks, finished and appointed in a style appropriate to their occupation.

The Bailey, Banks & Biddle Company bought the first three in 1915, and in the following year purchased two more, making a fleet of five which has now been in service from three to four years.

GMC Trucks are for high-class concerns that want their delivery equipment properly to represent them in appearance and performance. GMC reliability has become proverbial—GMC construction is the reason.

The General Motors Corporation gives to GMC Trucks a financial backing that assures permanent availability of service and parts.

*THE GMC FRONT AXLE*

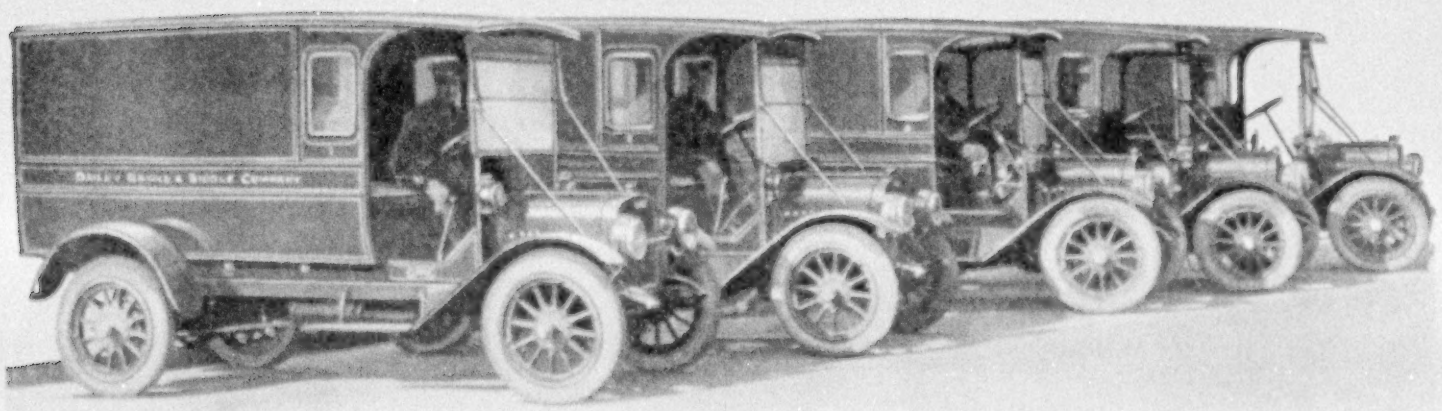
*Great tensile strength with light weight are combined in GMC Front Axles. Special analysis steel, heat-treated, is employed, with steering knuckles and knuckle arms drop-forged and heat-treated.*

GENERAL MOTORS TRUCK COMPANY

*One of the Units of the General Motors Corporation*

PONTIAC, MICHIGAN, U. S. A.

*Branches and Distributors in Principal Cities* (530)





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# Your Housewarming

**lasts the winter through where you "request the presence" of MONARCH Metal Weather Strip in your home**

No matter how costly your woodwork may be, there is a natural weathering process that "seasoning" cannot control. Windows and doors that fit perfectly when new will shrink and swell during different seasons, leaving cracks between the sash and frame that aggregate in each case an opening equal to more than sixteen square inches. This hole, four inches square, in every window is a handicap to the heating plant that cannot be overcome by excess radiation, but only by excess consumption of coal.

Monarch Metal Weather Strips completely seal these cracks between sash and frame. They keep out cold and dampness, keep your home warm and cozy within, and standardize the temperature of the entire house at a 20 to 40% reduction in coal consumption.

There is a specially-designed Monarch type of strip for every kind of outside opening. Self-adjusting to shrinking and swelling of sashes and frames, Monarch's first cost is its final cost.

Look up Monarch Weather Strips in your telephone directory and let our licensee tell you more about them. Or, if Monarch is not listed in the book, write us direct for additional information.

## Monarch Metal Weather Strip Co.

**5100 Penrose St., St. Louis, U. S. A.**

"Weather strips are 100% fuel conservation."—*U. S. Fuel Administration*

August 23, 1918 P. B. NOYES, Director of Conservation

**MONARCH**
**METAL WEATHER STRIPS**

*'Royal Cord' one of the five*

*The 35x5 'Royal Cord' tires on the rear wheels of my 12-passenger Hudson have totaled over 21,000 miles and are still in good condition. I think, if I had used 'Royal Cord' tires exclusively during the past year I would have saved a good many hundred dollars.*
*—David Crockett, Tacoma, Wash.*

*A 34x4 'Royal Cord' has made a total mileage of 43,091 miles on my 7-passenger Oldsmobile car on a stage run. Of this mileage over 18,000 miles was run on the right rear wheel.*
*—B. Henry, Tacoma, Wash.*

*Two 37x5 'Royal Cords' have covered 28,000 miles on the rear wheels of my 11-passenger Stevens-Duryea passenger bus. Both tires are still in service, one having totaled to date 34,000 miles and is still in fair condition.—Karl Brown, Tacoma, Wash.*

*I have a 36x4½ q. d. 'Royal Cord' casing which made a total mileage of 32,386 miles on one of my 20 passenger Winton buses. The car weighs over 9000 pounds fully loaded and makes an average of 30 miles an hour. I have three other 'Royal Cords' each of which has totaled 25,440 miles on the rear wheels of this same car.*
*—Sumner and Tacoma Stage Co., Inc.*

# A Tip from Tacoma

Tacoma is the center for many motor bus lines which operate in the mountains of Washington. It is their job to struggle up the rough, tough going of the foothills, then down the steep trails into the valleys—and thus to connect numerous widely separated points the railroads fail to reach.

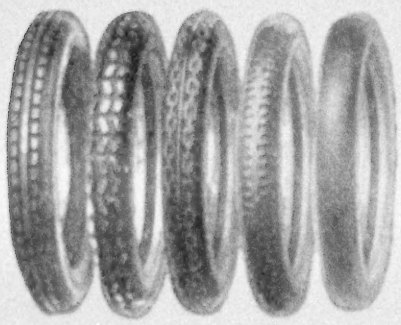
With the unusual conditions in mind, it is a most significant fact that Tacoma stage drivers are virtually unanimous in their endorsement of United States 'Royal Cords'.

We have no desire to boast of long mileages. Too many conditions influence the service a tire may give. We merely quote these letters to bring home this fact:

'Royal Cords' are built to endure. Their value proves up in extra miles—extra dependability. It manifests itself in the extra service exemplified by 'Royal Cord' success on Tacoma stages.

Surely, tires that will stand up and keep on standing up under such merciless conditions must have the stuff you want in your tires.

*'Royal Cord'* *'Nobby' 'Chain'* *'Usco' 'Plain'*



*For passenger and light delivery cars—'Royal Cord', 'Nobby', 'Chain', 'Usco' and 'Plain'. Also tires for motor trucks, bicycles and airplanes.*

## United States Tires are Good Tires



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# How a small business became the largest of its kind

**A true story especially valuable to any man who is, or hopes to be, in business for himself**

SOME years ago, in the corridor of a downtown office building in New York, a very little business was started. It dealt in a very small commodity—theatre tickets.

Today that business has a large establishment on Broadway near Forty-third Street and branches in a half dozen New York hotels. Its annual turn-over runs into the millions. "McBride's" has become a national institution patronized by thousands of successful men and women in all parts of the land.

### *"The average man could double his success"*

WHAT was it that happened to the "nice little business" to cause it to become the largest business of its kind?

John McBride, one of the three men who have made it, answers that question this way:

> "The Alexander Hamilton Institute's Modern Business Course and Service came to us at just the right time. It taught us to think in large terms; it gave us increased self-confidence. We were no longer satisfied to have a nice little business; we determined to have the largest business of its kind in the world."

Only successful men and women deal with the McBrides; those who are glad to pay 50 cents additional on each theatre ticket for the sake of service and convenience. The leaders of finance and industry thruout the country are their customers.

> "I have studied these successful men," Mr. McBride says, "and the quality they have which other men lack is simply this—complete faith in themselves. That faith is founded on the knowledge that they are masters of business; that they can deal with any crisis when it arises and can reach out and grasp any opportunity when it occurs.
>
> "I believe the average man could double his faith in himself in a few months if he would make himself master of the fundamentals of business thru such a training as the Alexander Hamilton Institute can give."

### *No business is different*

YOU say that the McBride business is "different." Mr. McBride does not think so. He found that he needed to know credits, and merchandising, office management, corporation finance, and investment, salesmanship, and advertising—the very same business fundamentals that apply in every office and factory in the land.

*John McBride of McBride's, Inc., New York City, the largest company of its kind in the world*

Fundamentally his business is no different than that of any other business. That is why he has profited by this Course and Service just as many men have in every line of business.

More than 95,000 men, representing every kind and department of business, have tested the practical value of this training. They have proved that training breeds self-confidence, and self-confidence means business progress and increased earning power.

### *Send for "Forging Ahead in Business"*

FOR men who really care about their future the Institute publishes a 116-page book entitled "Forging Ahead in Business." Would you today like to begin to acquire that training which gives a man confidence to seize his opportunity when it comes? Then for you there is a copy of this book—free. Send for your copy now.

**Alexander Hamilton Institute**

171 Astor Place New York City

Send me "Forging Ahead in Business" FREE

Name .....
*Print here*

Business Address .....

.....

Business Position .....

# *The Cenotaph*

—derived from two Greek words signifying "an empty tomb" has come by later usage to mean any form of memorial erected in honor of one whose mortal remains are elsewhere interred or lost.

It is a particularly fitting tribute to the sailor lost at sea or the soldier who lies buried in a foreign land.

Many such memorials will be placed in our cemeteries by the relatives and friends of those who so perished in the World War.

Whether they take the form of simple marker or costly monument, Dark Barre Granite, the "Rock of Ages"—because its beauty is everlasting—is a particularly appropriate material for this purpose.

*Write for the "Rock of Ages" booklet and consult your local dealer in memorials as to design*

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We advise the purchase and
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*We have prepared a circular on investment securities which we shall be glad to send you on request.*

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The reason why people drink 1,000,000 cups of G. Washington's Coffee every day, is because

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**COFFEE**

is the highest grade of pure coffee. It is *not* a substitute. It is absolutely pure. That is the explanation of its delicate aroma. Makes delicious iced coffee.

**Ready instantly when you pour on the water—hot or cold.**

Went to War! Home Again.

# RESEARCH

This laboratory, recently completed and equipped with every facility known to modern science, is dedicated to American Industry.

Its purpose is to develop new uses for Zinc—uses that will prove advantageous to manufacturers, improving their products and simplifying their methods and processes.

Our further expansion depends upon our greater usefulness to other industries. Zinc is the solution of many of their problems and we, therefore, feel a direct responsibility in helping to solve them.

To our command of the country's richest ore deposits, our extensive facilities for converting this ore to useful purposes, and our seventy years of experience in Zinc manufacture, we have added this research laboratory. It is at the service of all manufacturers who use or could use Zinc products.

THE NEW JERSEY ZINC COMPANY, *160 Front Street*, New York

ESTABLISHED 1848

CHICAGO: Mineral Point Zinc Company, 1111 Marquette Building

PITTSBURGH: The New Jersey Zinc Co. (of Pa.), 1439 Oliver Building

*Manufacturers of Zinc Oxide, Spelter, Spiegeleisen, Lithopone, Sulphuric Acid, Rolled Zinc Strips and Plates, Zinc Dust, Salt Cake and Zinc Chloride*

*The world's standard for Zinc products*

New Jersey Zinc

The stamped price is W. L. Douglas personal guarantee that the shoes are always worth the price paid for them

# W. L. DOUGLAS

"THE SHOE THAT HOLDS ITS SHAPE"

$5.00 $6.00 $7.00 $8.00 $9.00 & $10.00

You can save money by wearing W. L. Douglas shoes, the best known shoes in the world. Sold by 106 W. L. Douglas own stores and over 9000 shoe dealers. W.L.Douglas name and the retail price stamped on the bottom guarantees the best shoes in style, comfort and service that can be produced for the price.

Since 1883 W. L. Douglas name and the retail price has been stamped on the bottom of the shoes before they leave the factory. The stamped price is never changed; this protects the wearers against unreasonable profits and has saved them millions of dollars on their footwear.

The stamped price is W. L. Douglas personal guarantee that the shoes are always worth the price paid for them. The prices are the same everywhere — they cost no more in San Francisco than they do in New York.

W. L. Douglas $7.00 and $8.00 shoes are absolutely the best shoe values for the money in this country. They are the leaders everywhere. W. L. Douglas $9.00 and $10.00 shoes are made throughout of the finest leather the market affords, with a style endorsed by the leaders of America's fashion centers; they combine quality, style and comfort equal to other makes selling at higher prices.

W. L. Douglas shoes are made by the highest paid, skilled shoemakers, under the direction and supervision of experienced men, all working with an honest determination to make the best shoes for the price that money can buy.

BOYS SHOES
Best in the World
$4.00 $4.50 $5.00

**CAUTION**

Insist upon having W. L. Douglas shoes with his name and price stamped on the bottom.

If W. L. Douglas shoes cannot be obtained in your vicinity, order direct from factory by mail, Parcel Post charges prepaid. Write for Illustrated Catalog showing how to order by mail.

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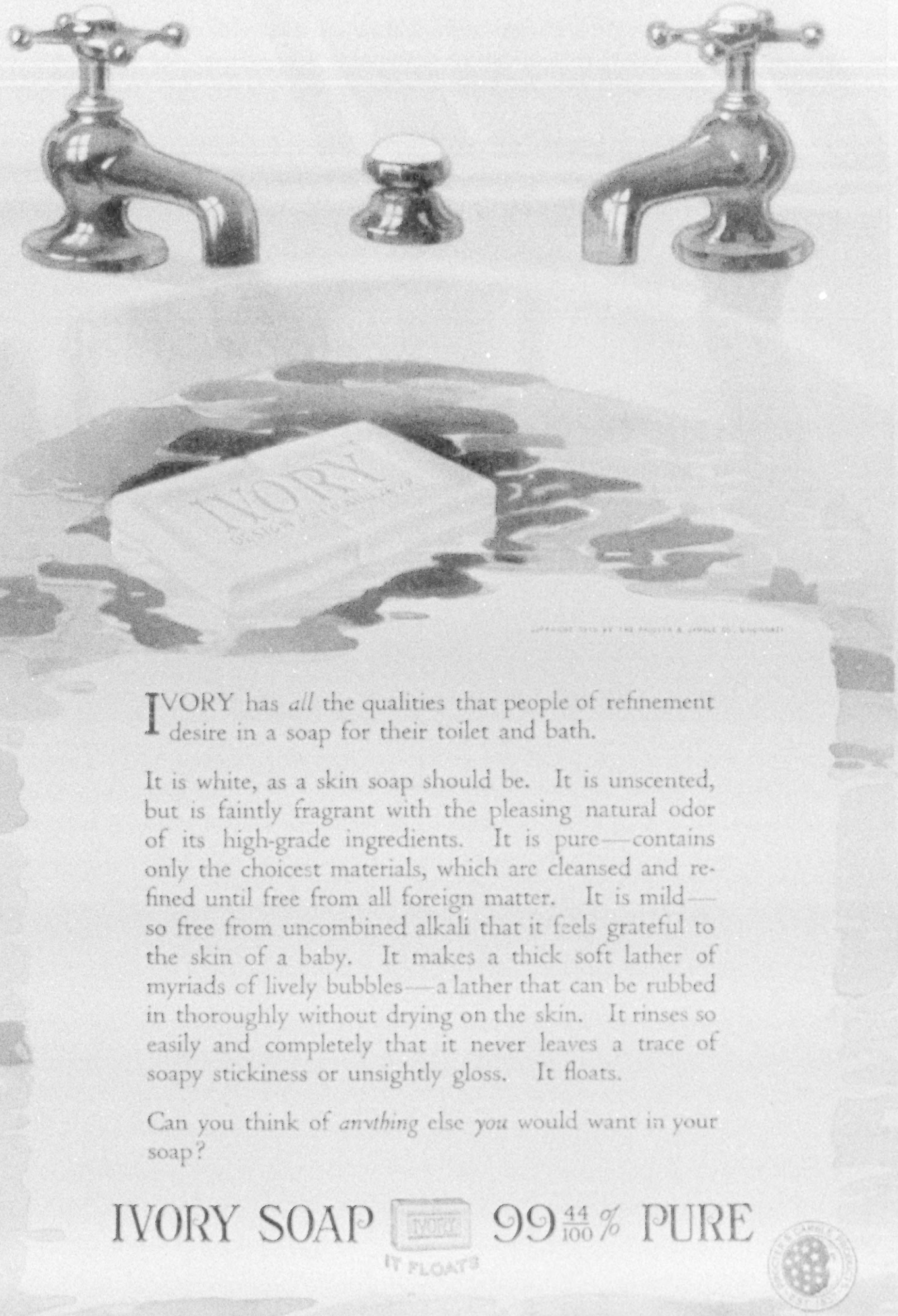


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# SHATTERED CAPITALS OF CENTRAL AMERICA

BY HERBERT J. SPINDEN

DOMINGO JUARROS, the historian, begins his account of the earthquakes that overwhelmed the first two capitals of Guatemala with this pious generalization:

"From the time the first transgressors were expelled from Paradise, miseries, misfortunes, and calamities have formed a prominent part in every history."

The man-made cataclysms of the Great War have held the attention of the world to such an extent that titanic disturbances due to blind forces of nature have been all but overlooked. Even now the destruction wrought by repeated earthquakes in Central America—destruction as grim and heartbreaking as that made by steel and flames along the battle line in France—takes its chief sentimental interest from the fact that the Republic of Guatemala has been a sincere associate of the United States in the Great War.

The city of San Salvador, capital of the Republic of Salvador, was destroyed on June 7, 1917; but it was rapidly rebuilt, and early in 1919 showed few indications of the terrible shaking it had received. On April 28, 1919, however, a still greater catastrophe overwhelmed the city, and practically all houses that had been restored were again leveled and many more deaths resulted.

In December, 1917, and January, 1918, the total destruction of Guatemala City occurred, the heaviest shock coming on January 24, 1918. In October and November of 1918 and as late as 1919 intense vibrations were still being felt.

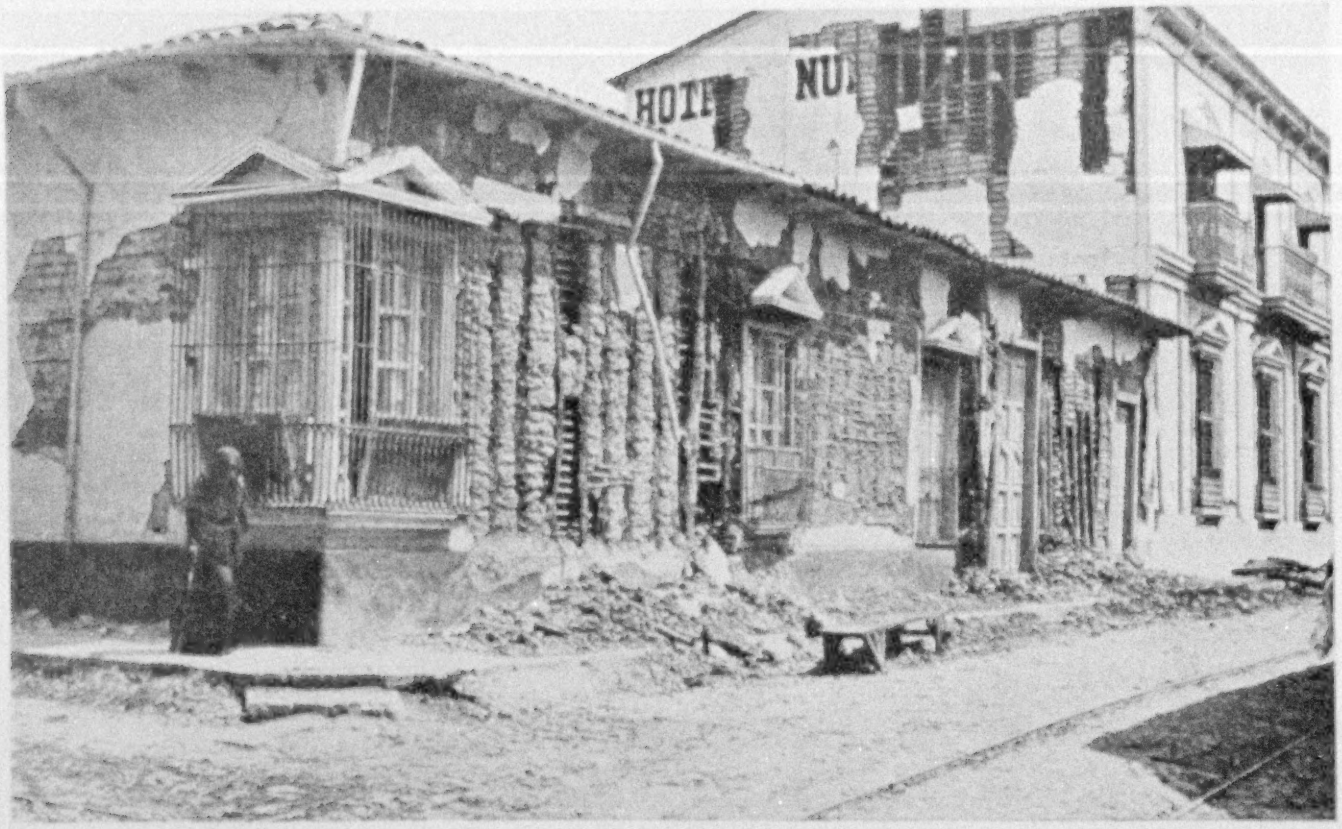
At the present time the volcano of Irazú, in Costa Rica, is in a state of eruption, possibly due to the seismic disturbances farther north.

## WHERE THE MOUNTAINS OFTEN TREMBLE

The recent catastrophes in Central America are but the latest of a long list recorded since the coming of the Spaniards. Scarcely a city between the frontiers of Mexico and Panama but has suffered from the dreadful instability of Mother Earth. Many have been destroyed and rebuilt at other sites only to be again destroyed. The coats of arms and other insignia of the Central American republics commonly show volcanoes. A certain volcanic quality seems to have entered into their political history.

The circumstances of the recent earthquakes in Salvador and Guatemala were strikingly different. The first was associated with a tremendous eruption of lava, but in connection with the other there was no eruption of any sort; only tremendous shakings, as though a giant with mountains heaped about his shoulders were struggling to free himself.

Both these earthquakes were probably caused by a slipping or faulting of the earth crust, although there are no surface




THE OLD-FASHIONED CONSTRUCTION OF SAN SALVADOR

Built with earthquakes in view, it is called Bajareque, and consists of a lattice of upright poles and horizontal cane rods, the interstices being filled in with mud and the whole surfaced with plaster. Almost all the destruction results from the ravages of termites (white ants), which eat the bases of the uprights so that the walls collapse when the quake comes.

A HOUSE OF LIGHT CONCRETE CONSTRUCTION REDUCED TO A PILE OF DEBRIS BY THE EARTHQUAKE: SAN SALVADOR

Structures of heavily reinforced concrete weathered the vibrations for the most part.

indications of this. In the case of San Salvador the earthquake doubtless occurred as a result of the eruption of the lava and the spectacular activity in the old crater that followed it.

### WHERE MISERY AND MADNESS REIGNED

From the vivid story sent to the National Geographic Society by Mrs. Martha Toeplitz, I quote as follows:

"It is Corpus Christi day in Salvador's beautiful and flourishing capital. Churches and dwellings are decorated and the streets filled with a throng in festal mood. The procession approaches, led by a band of musicians fiddling and scraping away in truly Southern fashion. White-clad maidens, with wreaths of flowers and veils flowing in the soft, warm breezes, priests and choir boys, the images of saints borne aloft, and the people—the typical 'festa' crowd.

"Suddenly rumbling and grumbling below, darkness, crashing walls, cries and screams from the panic-stricken people. What a never-to-be-forgotten contrast! The bright sky, the festa, the pretty homes and gay shops, the fruit of years of labor and industry wiped out in less time than it takes to tell.

"Where there was peace and happiness, misery and madness reign, and the earth, breathing heavily, shakes as though she wished to rid herself of all man-made ballast. Edifices crumble like packs of cards, showers of brick sweep the air, dull thuds and terrible crashes, screams and prayers for mercy, and with it all the wild, uncanny song of the church bells.

"The world seems to have come to an end and Hell opens her gates. A new crater suddenly forms on the mountain side, acids explode in the drugstores, mains break, and the town, quivering in every limb and stone, becomes a sea of flame.

"In vain do the bells chime in broken towers; in vain the tears and prayers! The quakes increase in violence till not a house remains standing, and a hundred red tongues of fire lick the ruins in mad fury.

"Everything is broken, shattered, and burned; but the furious elements are not yet appeased. Terrific thunder-storms beat down upon the helpless people huddled together in the park, enter every hole and crack, and destroy whatever the earthquake and fire have left.

"Days and nights follow without food or shelter, until very, very slowly the quakes become more infrequent."

The first shock at San Salvador came without warning, at 6.50 p. m., June 7, 1917. Although this quake was felt throughout a large part of Central America and was recorded on the scrolls of seismographs in the United States, it was not the one that did the most serious damage in that city. It appears, however, to have been responsible for the opening of the lava vents on the side of the volcano opposite that on which the capital is situated.

### HOW THE SHOCKS BEGAN

The first shock was followed at intervals of ten minutes by two others which drove the entire population of the city into the streets and open squares.

Then at 9.05 came the heavy shock which caused the greater part of the destruction in San Salvador. An hour or so before this time the sky had been illuminated by the outpouring of liquid stone from the new vents, and it is not impossible that a slumping of the earth's crust under the city itself resulted from the release of pressure after a large quantity of lava had run off.

At this time a pounding sensation under foot was noted, as well as a horizontal wave movement, and cracks are said to have opened and closed.

Many persons declare they heard sounds of rushing water and some aver that the water-level in wells rose and sank. But it is too much to ask for steady nerves and scientifically exact observations when the earth shakes at night and the lights go out, when the air is filled with shrieks and prayers and choking dust, and when in the dark the heavy tiles cascade from the roofs and the walls sway and fall.

It is capable of proof, however, that temperatures under the earth's crust near San Salvador were greatly increased. Artesian wells being dug on the Finca Modelo showed at first an increased water pressure and later an increased

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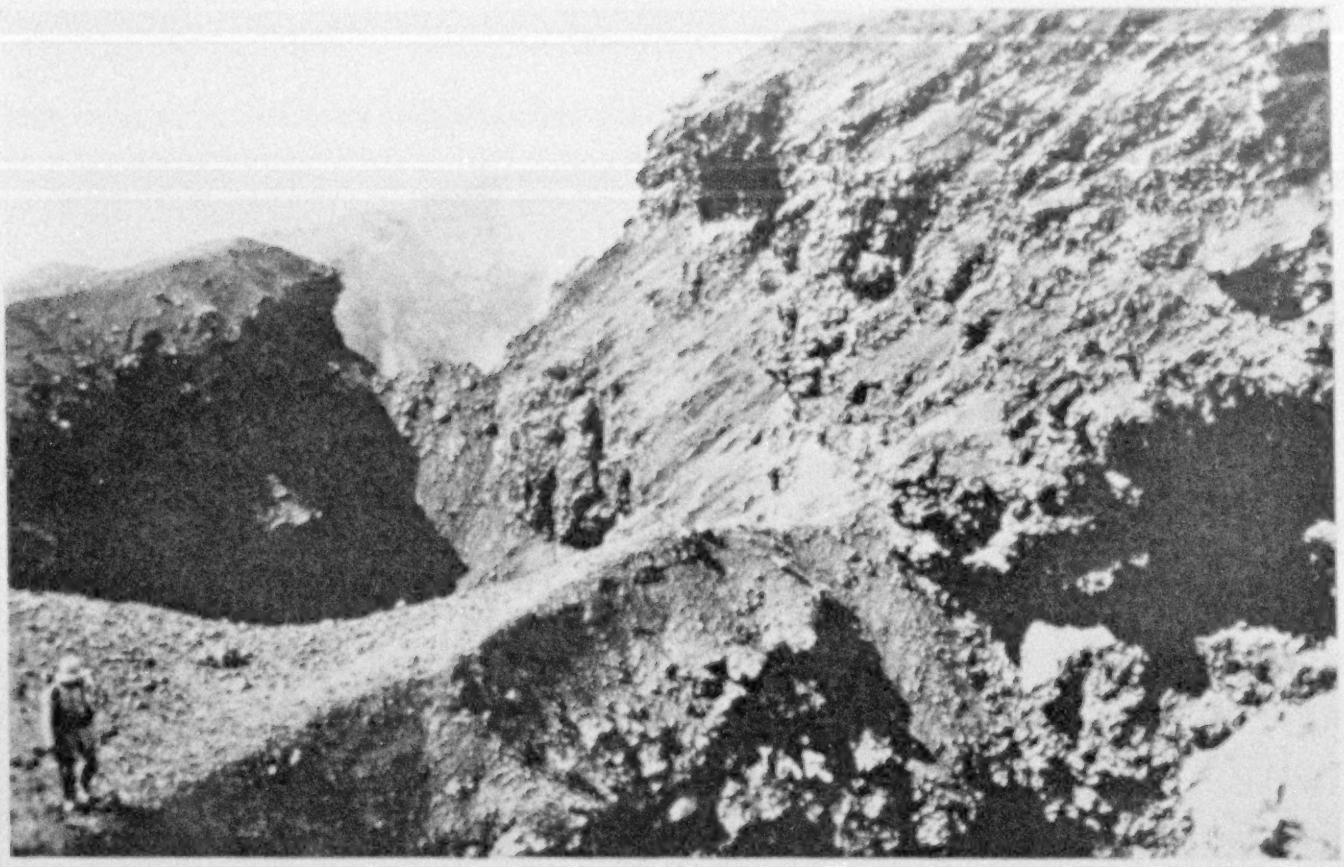
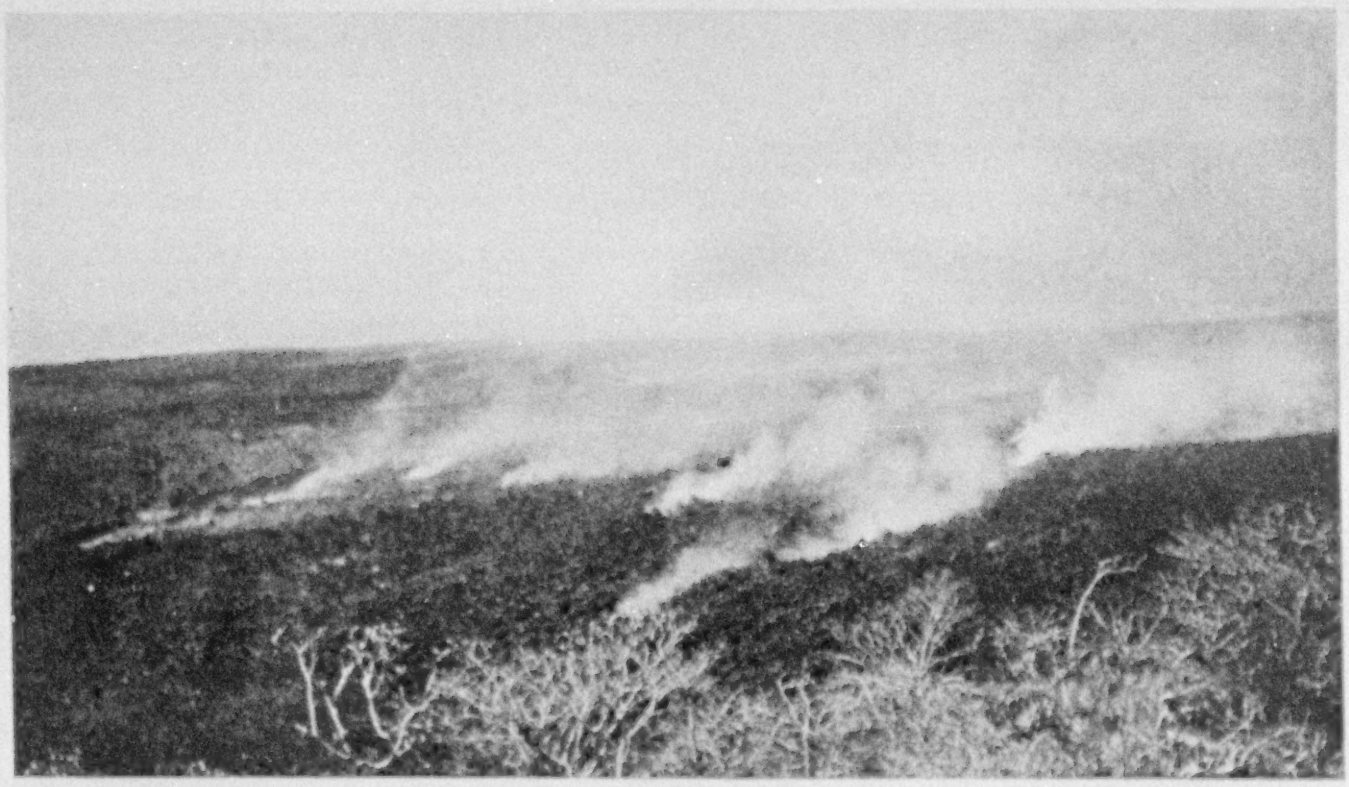


THE NEW VENTS IN THE VOLCANO OF SAN SALVADOR FROM WHICH THE LAVA POURED OUT ARE GREAT CREVASSES RATHER THAN CRATERS

Steam still rises in puffs from one or two of the vents, especially from a vent to which the name "Thunderer" has been given.



LOOKING OUT OVER THE FUMING LAVA A FEW DAYS AFTER THE FLOW OCCURRED

Many plantations were drowned by this strange flood, whose onslaught was so sudden that some of the natives were caught and buried by it.

temperature. The drills had to be withdrawn because at a depth of 2,000 feet they were greatly overheated.

### A LAVA FLOW WHICH WOULD FILL TWO PANAMA CANALS

The lava flowed out from a series of eight or more vents, apparently situated along a fissure running down the mountain side. The area covered by the lava has a length of nearly seven miles, a breadth of over three miles, and an average depth of perhaps thirty feet. The quantity of liquid stone that belched forth from the fiery mouths must equal twice the 200,000,000 cubic yards excavated from the Panama Canal.

The lava is mostly dead black, but sometimes brown with a metallic luster. It has a porous, stringy appearance, with bubbles elongated in the direction of the flow. The current structure is very interesting, and one sees petrified ripples, eddies, cascades, and foaming crests.

Near the vents one finds very strange and beautiful forms, where lava has streamed and dripped like molasses and has then solidified before it could spread and lose its stringy quality.

In company with a party of diplomatic officials and Mr. S. G. Morley, of the Carnegie Institution, I made a visit to the lava where it had blocked the highway and the railroad, and again higher up the mountain side, where it had swept down through coffee plantations.

Both Mr. Morley and I went far out over the broken crust to some fuming vents. It was apparent that the lava solidified quickly on the surface, and that the top crust was lifted bodily on the living streams below.

The flow is not level, but extremely irregular, and in many cases the slabs are piled up in pressure ridges. The sides and the advancing front did not have sufficient heat to fire the vegetation, and even far out in the flow there are giant ceiba trees around which the lava has heaped itself like ice above a bridge pier.

The vents from which the lava issued are not especially spectacular. For a long time they were too hot to permit a very close inspection, but now they can be approached easily. Steam and smoke rise from the vents and especially from one called the "Thunderer." The highest of the new mouths is considerably below the level of the bottom of the old crater.

An early description of the volcano of San Salvador runs as follows:

"The city is situated on the flank of a very high volcano, of wide circumference, which is now extinct, probably because it consumed all the materials of a combustible nature which were in it during the period of its activity. It has an enormous crater, half a league broad and very deep.

"In descending into it are found two terraces, or platforms, similar to those in limekilns. From the lower terrace rises a smoke so offensive that a Spaniard who reached there barely escaped suffocation. The mountain is covered from top to bottom with great cedars, pines, and forests of other trees." . . .

In this description no mention is made of the lake which in recent times filled the bottom of the crater and on which a rowboat had been launched for the pleasure of hardy picnickers (see page 193).

### A SIGHT THAT OVERWHELMED THE SENSES

The recent activities in the crater began some time after the lava had run out from the side of the mountain. It is not unlikely that the earthquake opened up the sealed chimney sufficiently to let water come in contact with the superheated core of the mountain, and that the steam then blew out the obstructions. At any rate, the lake, with a fountain in the middle, boiled furiously for days. Then a black mass of cinders and lava forced itself spasmodically above the water.

When the phenomenon was at its best, we climbed a steep road, through maize fields and coffee plantations, to the rim of the crater, nearly four thousand feet.

The thickly peopled valley rolled out before us as we ascended, and far below us in the distance was Lake Ilopango, itself a great crater, and mountain ridge upon mountain ridge beyond that. But the sight in front, from the rim of the crater, overwhelmed the senses.

Before us was a great funnel, over a mile in diameter and a thousand feet

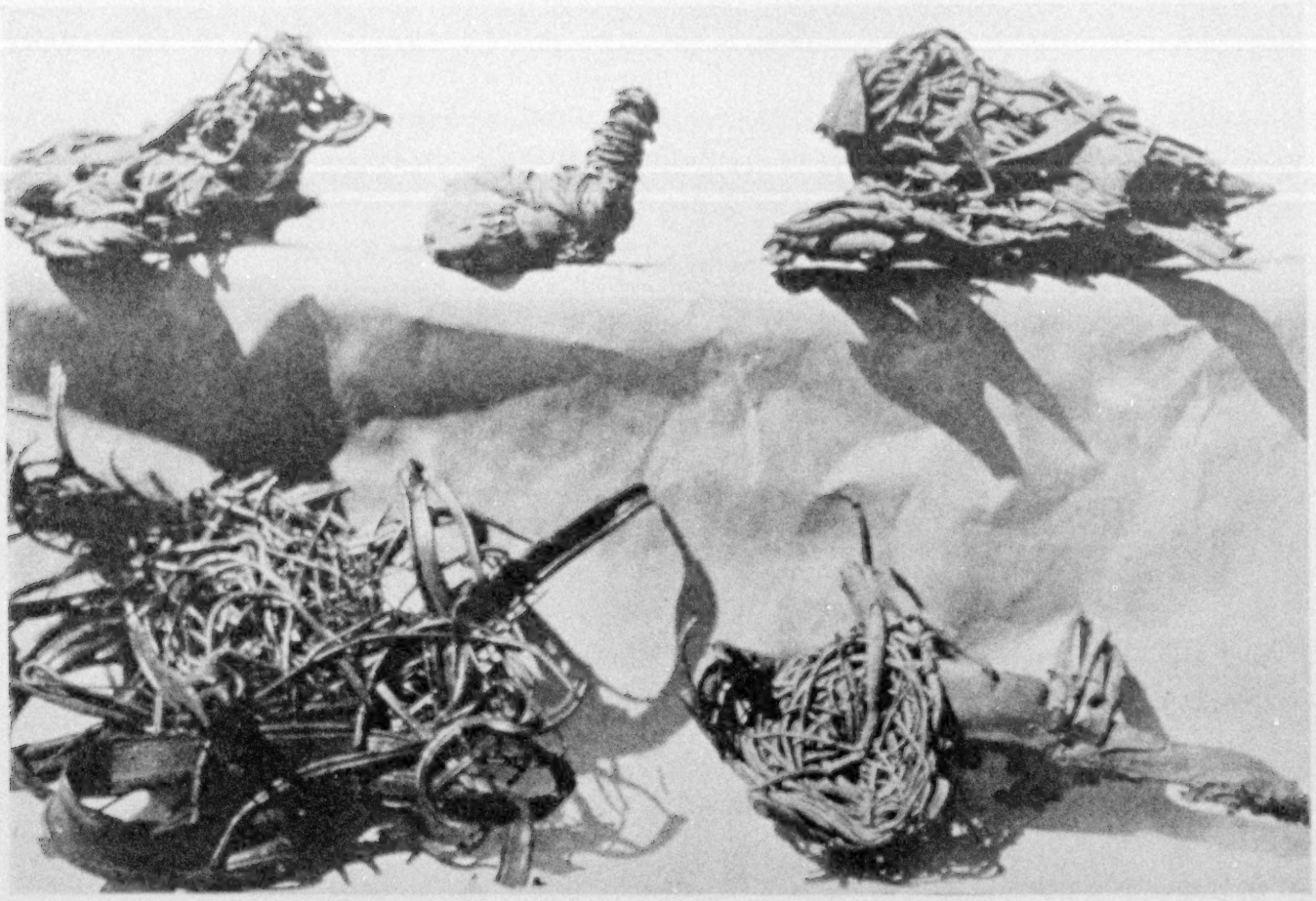
XUM

THE LAVA FLOW FROM THE VOLCANO OF SAN SALVADOR

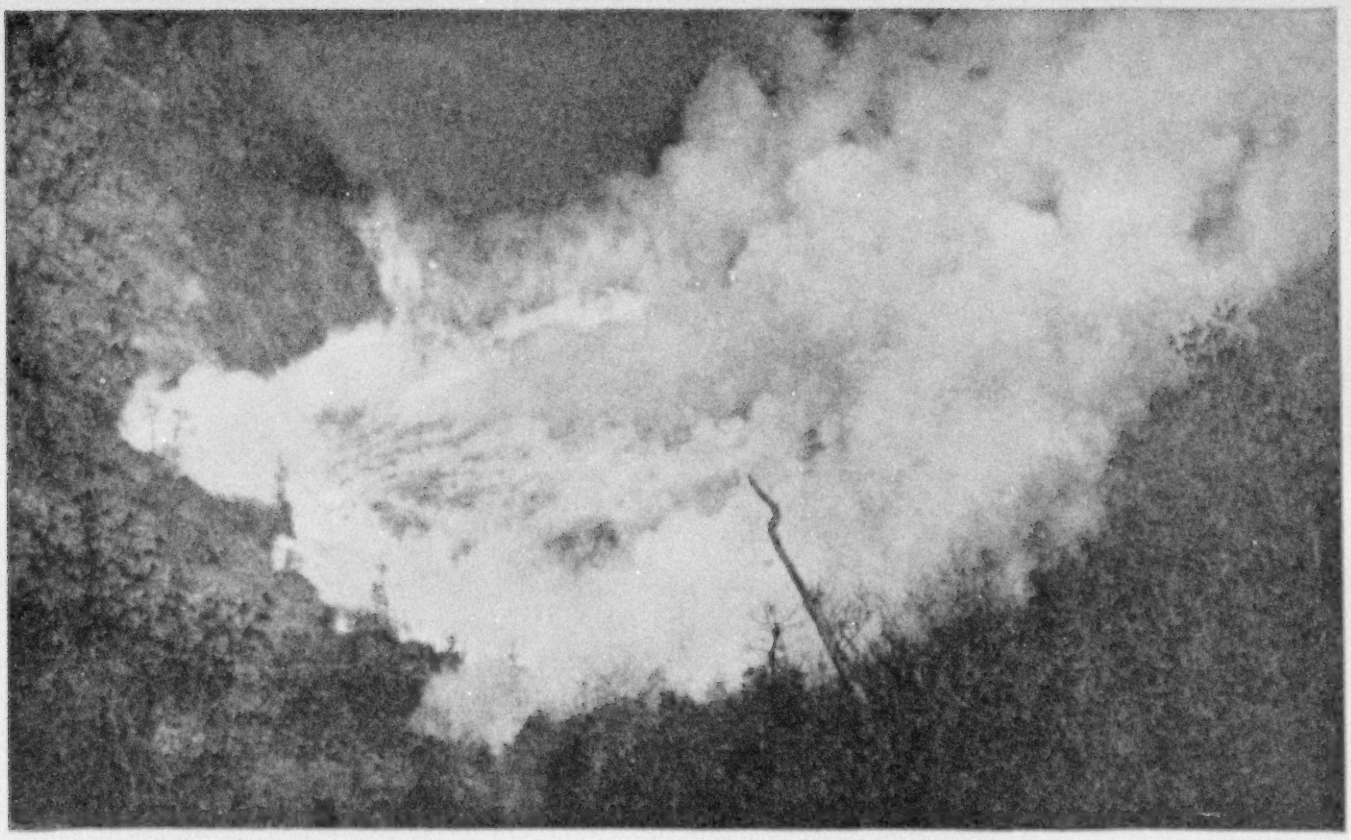
It had swept through a coffee plantation and had come to halt in a maize field. Finger-like side flows run off from the main stream, which is six or seven miles long.

WHERE THE LAVA FLOW BLOCKED THE SALVADOR RAILROAD BETWEEN QUEZALTEPEQUE AND SITIO DE NINO

The lava covered the track for a distance of over three miles. The railroad now passes directly over the lava.



STRANGE FORMS OF LAVA THAT DRIPPED IN A FINE STREAM AND SOLIDIFIED BEFORE THEY COULD FUSE AGAIN INTO SOLID MASS



AN OLD CRATER LAKE

After the lava had flowed out from the side of the mountain (see pages 188-190) the lake in the old crater (see page 193) boiled dry and the old volcano of San Salvador, which had been quiescent for several hundred years, resumed its activity (see pages 195 and 196).



XUM

WHERE THE LAVA FLOW BLOCKED THE HIGHWAY NEAR QUEZALTEPEQUE

This spot is miles distant from the vents and yet the black lava is piled up to a height of 30 feet or more in rough pressure ridges. The vegetation was not set on fire because the stream of liquid stone was pushing forward and dropping on either side masses of lava already solidified and cooled.

deep. The walls were banded rocks, dull red and dark gray in color, showing the rings of growth by which the volcano had built up its cone.

### LOOKING DOWN INTO AN ACTIVE CRATER

Clinging to the shelves and the sheer cliffs were vines and trees silvered with ash. In the dusty center of the dried-up lake was an opening like the mouth of a sunken tube, and from this opening a black geyser of cinders and lava fragments shot up at intervals, with a throaty noise, while the earth trembled.

When the black geyser had forced itself to a height of perhaps four hundred feet, the steam burst out in jets of purest white from the poised mass. Then the cinders rained down and the lava slabs fell like the crinkled ash of burnt paper around the mouth of the tube. The columns of white steam almost blotted out the background, as it blossomed into clouds and rose high above the rim of the crater.

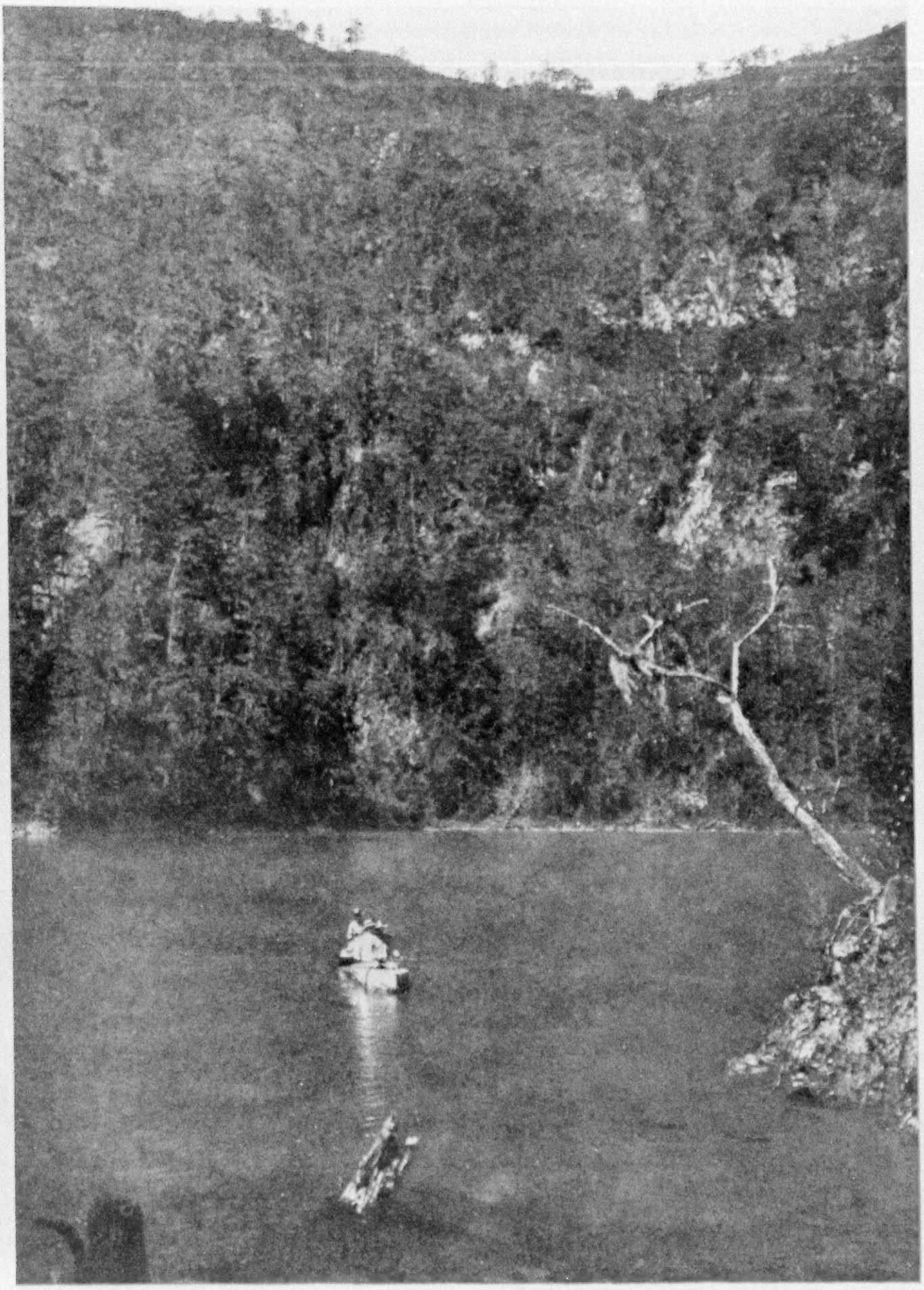
At this time there still were pools of violently agitated water near the margin of the old lake. Later, when these were all consumed, the steam turned to smoke and the display of fireworks at night was worth the discomfort entailed by a visit to the crater's rim.

As the days passed, a little cone grew up around the mouth of the tube. The process of volcano-building was dramatized for a handful of humans in a gallery far above the stage.

### A CITY OF EARTHQUAKE SORROWS

The first city of San Salvador was founded by Jorge Alvarado at La Bermuda in 1528, but after about ten years the seat of government was changed to its present location.

San Salvador has been visited many times by disastrous earthquakes, especially noteworthy being those of 1575, 1593, 1625, 1656, 1798, 1839, 1854, 1873, and 1917. Aside from the volcano of San Salvador which apparently had been dormant since the Spanish occupation until its recent outburst, there are many other volcanoes in Salvador, and some of them have been very active.



THE CRATER OF THE VOLCANO OF SAN SALVADOR AS IT APPEARED BEFORE THE RECENT ERUPTION

A lake occupied the bottom of the crater and the steep slopes were covered with pine and other trees. Contrast this peaceful lake with the present scenes (see pages 191, 195).



XUM

Drawn by A. H. Bumstead

A MAP OF CENTRAL AMERICA, SHOWING THE PRINCIPAL VOLCANOES WHOSE ERUPTIONS HAVE FOR CENTURIES LEVIED A HEAVY TOLL ON LIFE AND PROPERTY

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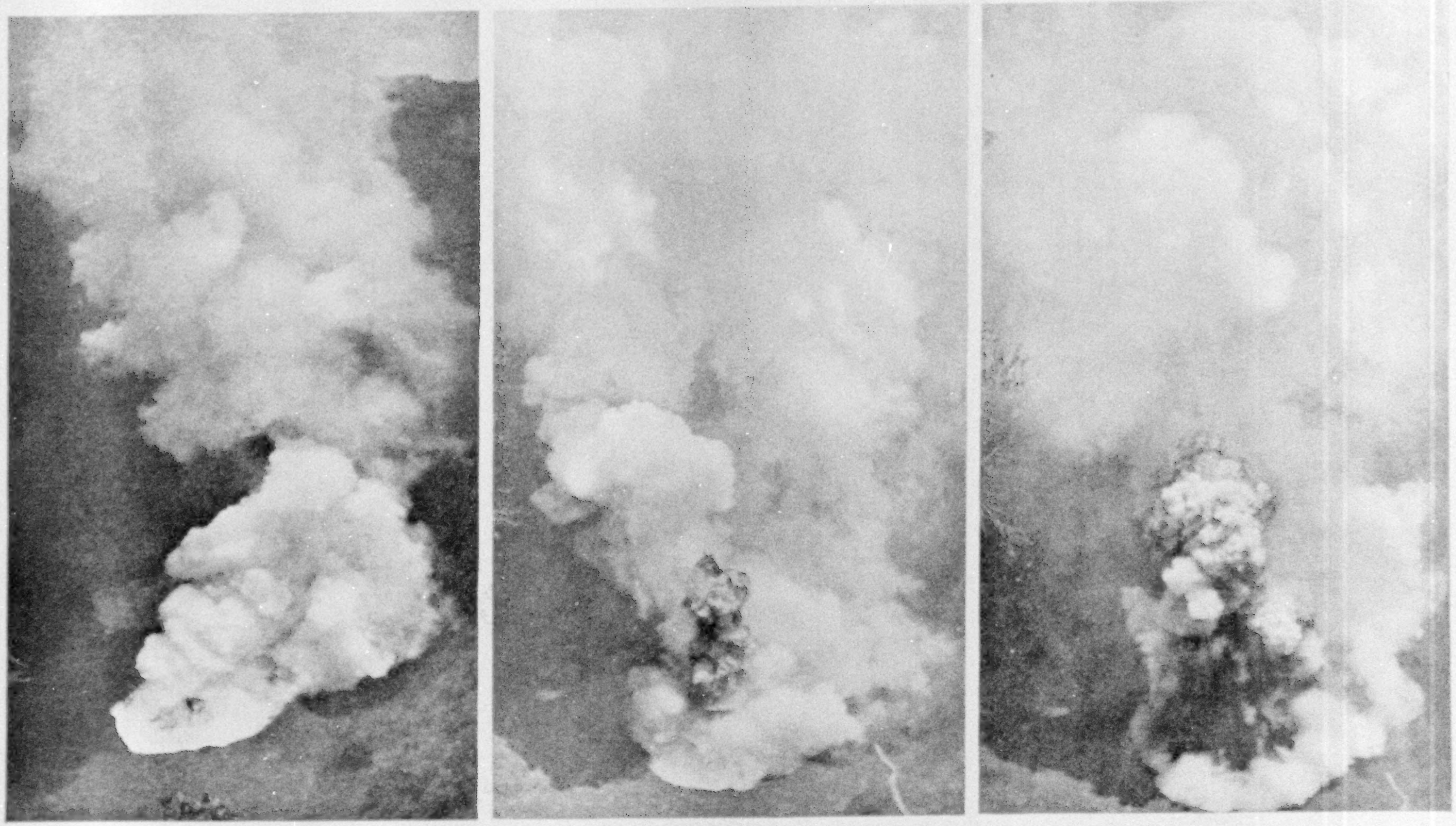
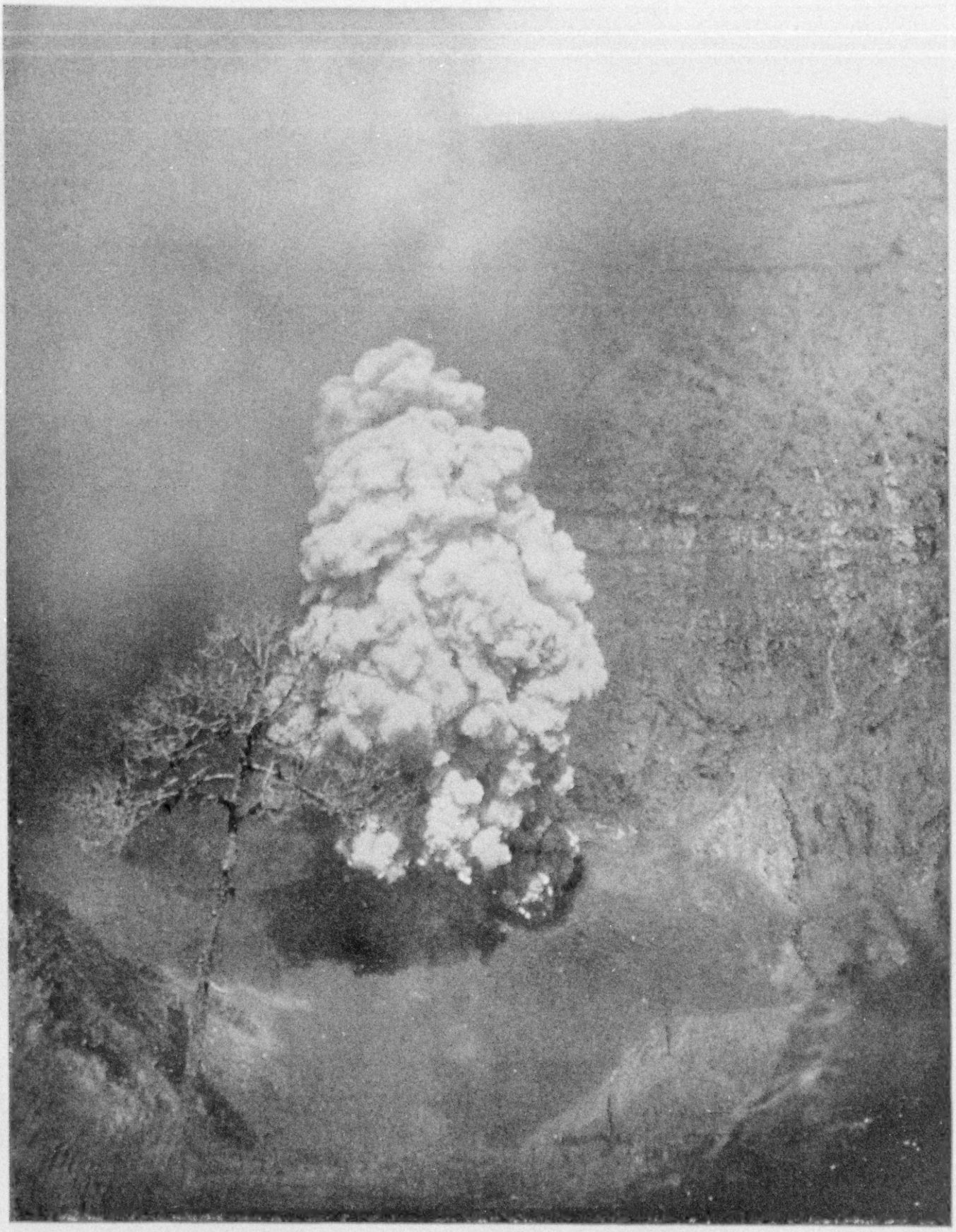


THREE STAGES OF THE ERUPTION AT SAN SALVADOR VOLCANO

"The last remnant of the lake has disappeared completely. In its place a gate to Pluto's world had formed and in its center blazes a fiery fountain. It seems incredible that clouds of such volume filled with gigantic stones and lava could shoot from comparatively so small an opening. They bound forth with such tremendous force, such terrific thundering crashes, that the crater walls tremble as violently as the earth. The air pressure is so strong that we are thrown off our feet. A smoke column rises about 100 yards high in the air, followed by an explosion compared with which that of the 42 cm. guns would seem like that of a toy. The crater itself is like the sounding board of a phonograph and the crater walls repeat the detonation twenty times and more. It sounds for all the world like a continuous bombardment. The gases make their escape with hissing and whizzing and evaporate in long bluish flames."—*Note from Mrs. Martha Toeplitz.*



TOWARD THE END OF THE ACTIVITY OF SAN SALVADOR VOLCANO THE STEAM TURNED TO SMOKE OR AT LEAST SEEMED CHARGED WITH VOLCANIC DUST

The old trail down the precipitous crater walls has been destroyed by landslides. The walls rise about 1,000 feet above the lake.

The volcano of Santa Ana was especially violent in the sixteenth century. For the year 1643 an eruption is accredited to San Vicente. In 1844 a great lava flow, analogous to the recent one of San Salvador, broke out of the volcano of San Miguel. But the most romantic story is that of the formation of Izalco volcano in historic times.

### A FLASHING VOLCANO WHICH ACTS AS A LIGHTHOUSE

This cinder-covered peak, nearly five thousand feet high, has built itself up from what was level plain at the base of Santa Ana volcano in 1770.

During its long periods of activity Izalco throws up clouds of smoke and steam in great puffs, lit from below by the flame in the crater. These clouds rise high above the volcano and scarcely dissolve before others take their place. From this flashing effect, which can be seen far at sea, the volcano is known along the coast as the lighthouse of Central America.

John L. Stephens, in his inimitable journals, describes a view of the activities of Izalco in 1840:

"We came out suddenly upon an open front, higher than the top of the volcano, commanding a view of the interior of the crater, and so near it that we saw the large stones as they separated in the air and fell pattering around the sides of the volcano. In a few minutes our clothes were white with ashes, which fell around us with a noise like the sprinkling of rain.

### ERUPTIONS AT REGULAR INTERVALS

"The crater has three orifices, one of which was inactive; another emitted constantly a rich blue smoke; and after a report deep in the huge throat of the third, appeared a light-blue vapor, and then a mass of thick black smoke, whirling and struggling out in enormous wreaths and rising in a dark, majestic column, lighted for a moment by a sheet of flame; and when the smoke dispersed, the atmosphere was darkened by a shower of stones and ashes.

"This over, a moment of stillness followed, and then another report and eruption, and these continued regularly, at intervals, as our guide said, of exactly five minutes, and really he was not much out of the way. The sight was fearfully grand."

Salvador has many fine lakes that occupy craters. Of these Lake Ilopango is perhaps the most interesting to the traveler. Lake Cojutepeque, with its sheer walls, is situated in the flanks of the great volcano of Santa Ana, which has been scarred and scored by so many wars of the giants.

Lake Guija, on the boundary between Salvador and Guatemala, was formed by a lava dam from an eruption of San Diego volcano. Stories are current of towns submerged beneath its waters. The level of the lake is sufficiently above the level of the old valley to offer great possibilities of water-power below the lava dam.

### THE CHRISTMAS EARTHQUAKE IN GUATEMALA

The series of earthquakes culminating in the heavy shocks that destroyed Guatemala City began on November 17, 1917, with a shock centering in the region of Lake Amatitlan. A large part of the town of Amatitlan was then thrown down. From this date on the trembling of the earth was continuous, from ten to thirty light quakes being recorded every day. Naturally the populace became more or less hardened to them, but there was much uneasiness concerning the outcome.

The first disastrous earthquake fell on Christmas night, at about 10.20. It did considerable damage and served as a strong warning, which doubtless saved many lives, for at 11.23 came an extremely heavy shock, which brought down many houses and killed, perhaps, fifty persons.

All night, with a full moon in the untroubled sky, the populace huddled in parks while the earth trembled.

On December 29, in the afternoon, a heavy vibration again ran through the shaken city, and more walls fell. At 10.40 p. m., on January 3, a long and heavy shock brought down the towers of the cathedral and many other landmarks,

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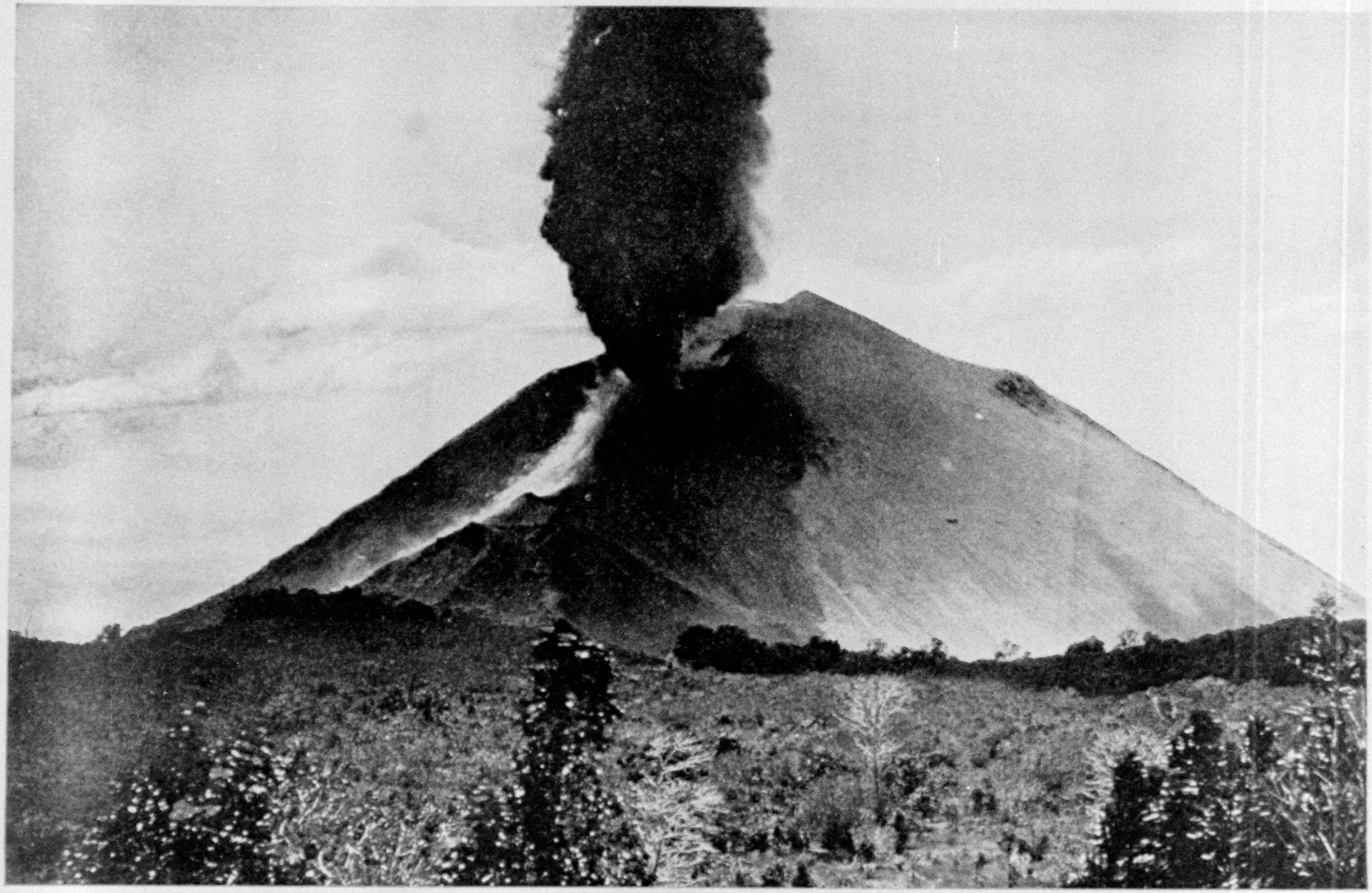

Photograph by Rossolimo de Strelecki ©

LOOKING TOWARD ONE OF THE CRATERS OF IZALCO VOLCANO, FROM WHICH THE SMOKE IS RISING IN A GREAT COLUMN

The ashes spread broadcast by volcanoes greatly enrich the land and often more than repay the property damage done by earthquakes and lava flows. The volcano was doubtless much higher at one time.

XUM

Photograph from M. Rohde

GUATEMALA: QUEZALTENANGO

GUATEMALA: CAMINO REAL (THE ROYAL HIGHWAY)

Photographs from M. Rohde

EARTHENWARE SALE: MARKET-PLACE AT CANTEL, GUATEMALA

Photograph from M. Rohde

A WAYSIDE SCENE IN GUATEMALA: AGAVE (NOT THE KNOWN ALOE)



XUM

while on January 24 came the fourth and heaviest earthquake, sufficient to ruin nearly every edifice.

### A HOTEL MADE OF DOORS

A bit of personal narrative may not be out of place here. I was fortunate enough to arrive in Guatemala City about twenty minutes before the earthquake of January 24, 1918. As has been said, three other heavy shocks had already left their mark upon the city. All the hotels were ruined and temporary shelter had to be sought in shacks set up in open squares. I secured a bed at the new Hotel Roma, which was constructed of doors taken from the old hotel of this name and erected in the old carriage yard in front of the railroad station.

The sun had scarcely set and a full moon was rising in an unblemished sky. For me there was not on this occasion any premonition, although at other times I have sensed the coming vibration for a brief moment, as one senses a coming storm. The dishes on the table began to rattle and dance and the walls and tin roof to creak and sway.

We crowded through the doors into the open street, stumbling and falling. From near and far came the roar of falling walls. The yellow dust arose, obscuring the moon. Then the trembling died away and ceased, but the dust pall lay over the stricken city.

These last shocks apparently centered under Guatemala City, with a radius of destruction measuring thirty miles. Fear was felt lest the earth should give way before the fearful convulsions and a volcano form in the city itself.

The deep cuts of the railroad running to Puerto Barrios were filled in, time and again, and only through untiring labor was the line kept open for long enough periods to rush in supplies.

Not only were houses ruined, but water mains were broken and the people exposed to the dangers of using water which had oozed up in the streets. In the cemeteries the skeletons were shaken out of the burial cists and many remains were afterwards cremated. The loss of life in Guatemala City probably did not exceed two hundred.

Only a few broken walls remain to mark the site of Guatemala's first capital, now known as Ciudad Vieja. The site was selected by the conqueror, Pedro de Alvarado, on St. James Day, 1524, and the actual building was commenced three years later by Jorge de Alvarado. The official title of the city was "St. James of the Gentlemen of Guatemala." The arms granted by Charles V in 1532 were "a shield charged with three mountains on a field gules, the center one vomiting fire, and surmounted by the Apostle St. James, on horseback, armed and brandishing a sword; an orle, with eight shells or, on a field azure; crest, a crown."

### MYSTERY IN THE DESTRUCTION OF GUATEMALA'S FIRST CAPITAL

There is some doubt whether the destruction of Ciudad Vieja should be ascribed to an earthquake, to a cloudburst, or to the two combined, but it seems hardly likely that it can properly be ascribed to an actual eruption of the Volcan de Agua.

The crater of this volcano is a grassy basin, containing a few pine trees, at the very summit of an almost perfect volcanic cone, and there are no signs that a lake ever existed in it. The account given by Juarros of the destruction of Ciudad Vieja on September 11, 1541, runs as follows:

"It had rained incessantly and with great violence on the preceding days, particularly on the night of the 10th, when the water descended more like the water of a cataract than rain. The fury of the wind, the incessant, appalling lightning and dreadful thunder were indescribable. The general terror was increased by eruptions from the volcano to such a degree that in the combination of horrors the inhabitants imagined the final destruction of the world was at hand.

"At 2 o'clock on the morning of the 11th the vibrations of the earth were so violent that the people were unable to stand; the shocks were accompanied by a terrible subterranean noise which spread universal dismay. Shortly afterward an immense torrent of water rushed down from the summit of the mountain, forcing with it enormous fragments of rocks and large trees, which, descending upon the ill-fated town, overwhelmed and de-

stroyed all the houses and buried a great number of the inhabitants under the ruins; among the many, Doña Beatriz de la Cueva, the widow of Pedro de Alvarado, lost her life."

### THE SECOND CAPITAL IS ALSO DESTROYED

The capital was removed to a new location, a few miles farther away from the base of the Volcan de Agua, and rebuilt in great magnificence, as befitted the governmental and ecclesiastical center of all Central America (as well as Chiapas, Mexico). This second capital is now called Antigua Guatemala.

The various orders, including the Franciscans, Dominicans, Capuchins, Jesuits, Recollects, Mercedarians, Bethlehemites, etc., and the sisterhoods of Santa Clara and Santa Teresa, built monasteries, nunneries, hospitals, colleges, churches, and shrines and the civil government erected many public buildings, including the splendid Palace of the Captains.

ONE OF OVER FORTY CHURCHES IN THE SHATTERED CITY OF ANTIGUA GUATEMALA

This is a view of the ancient cathedral, looking from the apse toward the front. The central part of the nave has fallen, as has the dome. Antigua was the second capital of Guatemala and was destroyed by natural forces in 1773 (see text, page 204).

But numerous earthquake shocks, often associated with eruptions of the Volcan de Fuego, continued to disrupt the most solid constructions. Great damage was done in 1565 and again in 1575-76 and 1577. In 1581 there was an eruption of the volcano, and such vast quantities of ashes were thrown out that lights were necessary in midday.

The years 1585 and 1586 were memorable for an association of earthquake and volcanic eruptions, beginning on January 16 of the former year and extending till December 23 of the latter, when the greater part of the city was destroyed and many persons killed. On February 18, 1651, there were violent vibrations that caused much damage. A chronicle states:

"The tiles from the roofs of the houses were dispersed in all directions, like light straws by a gust of wind; the bells of the churches were rung by the vibrations; masses of rock were detached from the mountains; and even the wild

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AN ANCIENT FOUNTAIN IN A PASTURE AT ANTIGUA GUATEMALA

There are many such details to impress one with the quondam beauty of this shattered and abandoned capital.

beasts were so terrified that, losing their natural instinct, they quitted their retreats and sought shelter among the habitations of men."

### TIME BEAUTIFIES A CITY IN RUINS

Other disasters are recorded for 1679, 1681, 1683, 1684, 1687, 1689, and 1705. In 1717 the citizens became so alarmed at the terrifying phenomena that they asked leave to abandon the city, but before the license arrived they had recovered from their fears. The fate of Antigua Guatemala was sealed by the formidable earthquakes of 1773, culminating in the dreadful convulsion of July 29.

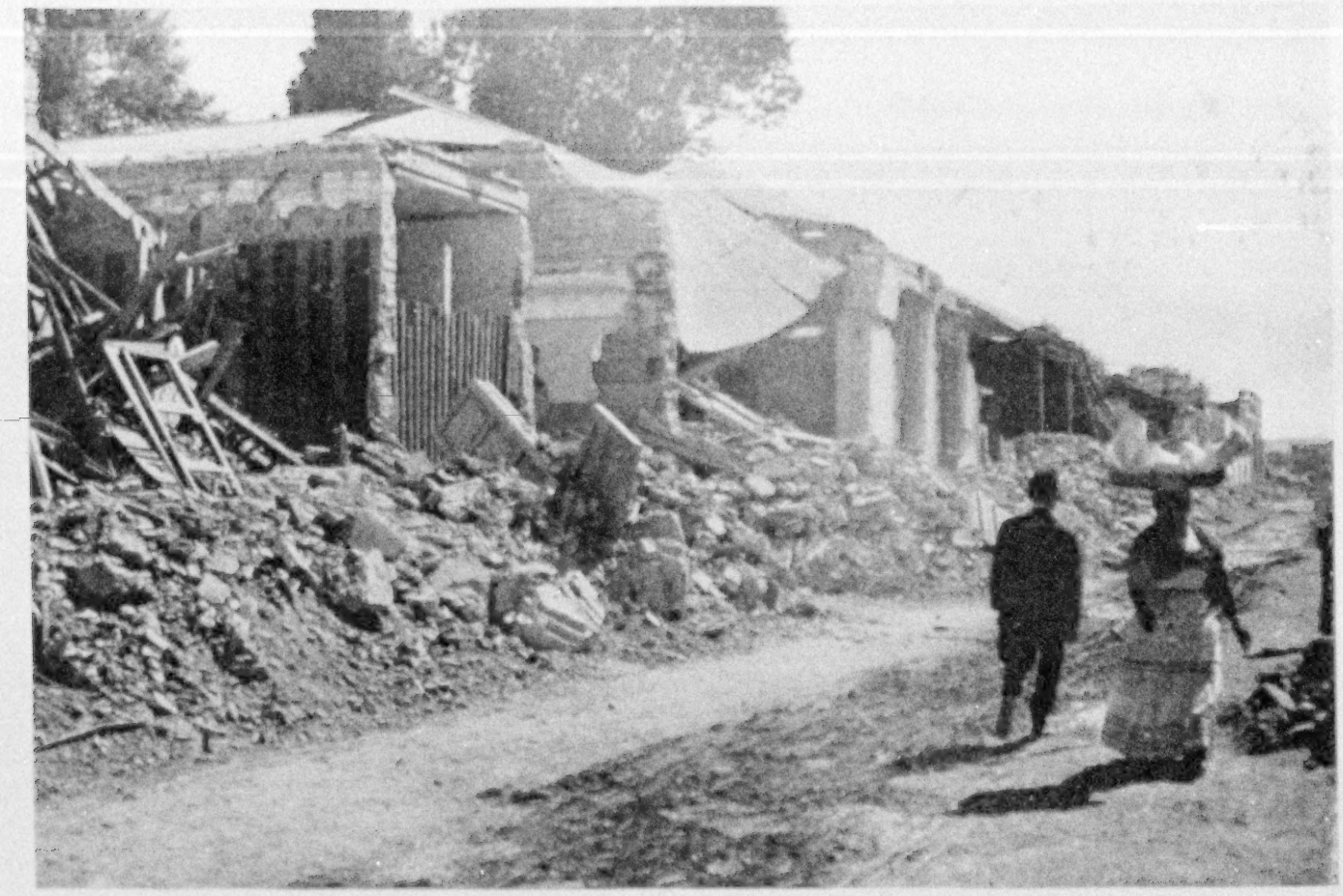
Today one finds a peaceful town dominated by majestic ruins that the soft hand of Time has made beautiful. The refurbished façade of the cathedral looks down upon the central square of the city and conceals a vast extent of broken vaults. Through a side gate you enter the broken nave and pass down under the central dome, where the pendentives are rich with angels and labyrinthine scrollwork; or you climb to the roof and walk gingerly over the grass-grown hummocks of egg-shell vaulting to the low parapets of the cornice.

Throughout the modern town and, indeed, far beyond its limits, one encounters the wrecks of temples or comes unexpectedly on fountains or wayside shrines. There are said to be over forty edifices of divine worship in Antigua Guatemala—some restored in part, others utterly deserted.

### SEEKING SAFETY FOR A CITY IN THE SHADOW OF A CHURCH

When it was apparent that Antigua should be abandoned, the government cast around for a likely spot for the capital and finally decided on the present location of Guatemala City.

The deciding argument for this site



A STREET IN GUATEMALA CITY

For mile after mile, houses are tangles of rafters and heaps of plaster and adobe. The ground will in most cases have to be cleared before reconstruction or restoration can take place.

was the church of the Cerrito de Carmen, which in 150 years had not been damaged by earthquakes. So St. James of the Gentlemen of Guatemala was re-established in 1776 and until Christmas of 1917 did not experience a devastating earthquake—a record of nearly three hundred years for the site.

Over the doorway to this church of the Cerrito de Carmen, leading in from the court, one may read in old-fashioned Spanish the following inscriptions:

*Right:* "He who aided the foundation of this house was the illustrious Don Antonio Maria Cheberi de Justiniano, conqueror."

*Center:* "The Virgin Mother of God, conceived without the original sin. In 1620 I. H. S. (Jesus Savior of Men)."

*Left:* "The founder of this was Juan Croz, religious of the seraphic national order of the Lordship of Genoa."

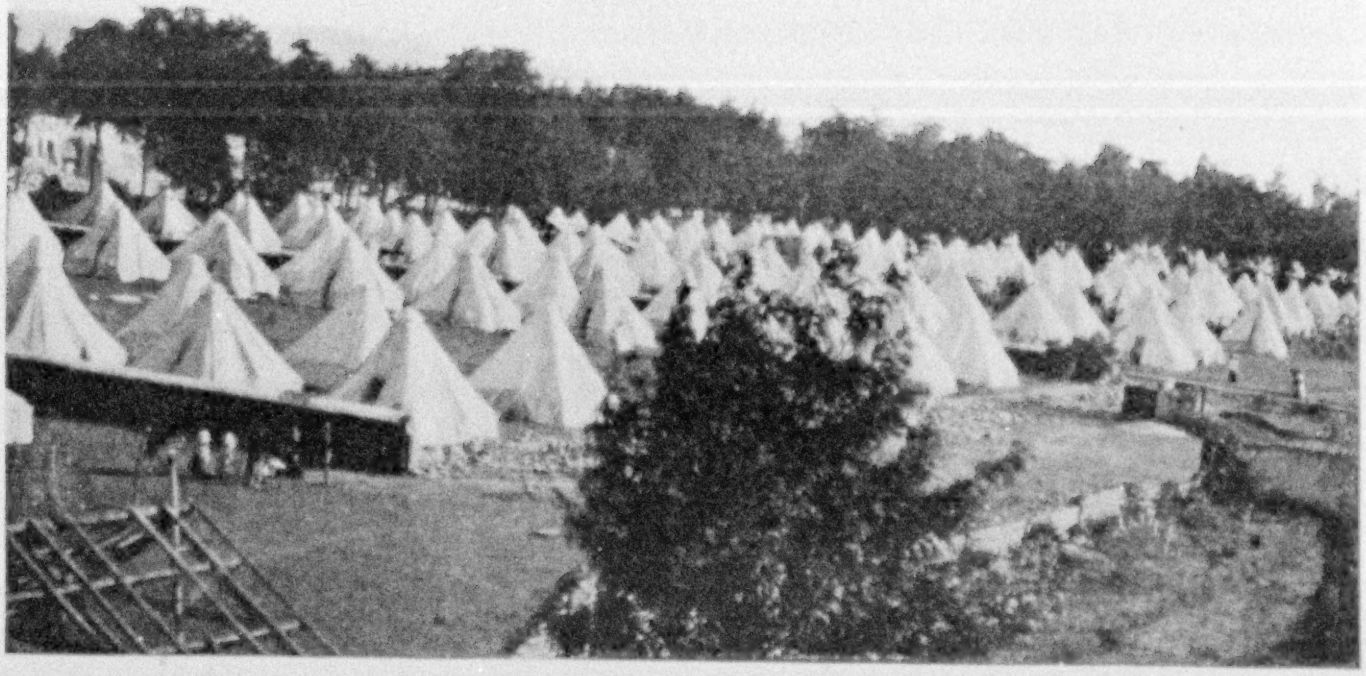
And now the church that stood on the rock for three hundred years is a ruin, its solid façade shattered, its roof fallen, its dome broken like an egg-shell. But the image has been rescued from its shrine and set up under a temporary roof. Before it services are held.

From the fixed face of the painted Christ one has only to turn the head to see the streets of the "city that was," spread out like a map—deserted streets blocked by fallen houses; and beyond the far-stretching ruins rise faintly through the haze the toothed summit of Pacaya, and to the right of this the cone of the Volcan de Agua.

### NICARAGUA AND HONDURAS THE SCENES OF MANY EARTHQUAKES

We need not sketch in detail the volcanic actions that have been so ruinous in this part of Guatemala, especially in the cities of Quezaltenango and Chiquimula, but before closing let us review briefly the experiences of Honduras, Nicaragua, and Costa Rica (map, page 194).

Honduras lies almost entirely outside the area of active volcanoes and represents a geologically old land-mass. However, her territory comes down to the Gulf of Fonseca, which is a hotbed of



THE HOSPITAL SECTION OF THE AMERICAN RED CROSS RELIEF CAMP "MANUEL ESTRADA CABRERA," IN GUATEMALA CITY

Located opposite the Military Academy, in the Reforma, 4,000 tents were loaned by the War Department, U. S. A. These were rushed from Key West. At the time this snap-shot was taken between 1,100 and 1,200 of these tents were set up and nearly all occupied, and foodstuffs were being distributed; medical attention was provided and 8,000 persons had been vaccinated for small-pox and 5,000 for typhoid and paratyphoid. Escula Practica is in the background.

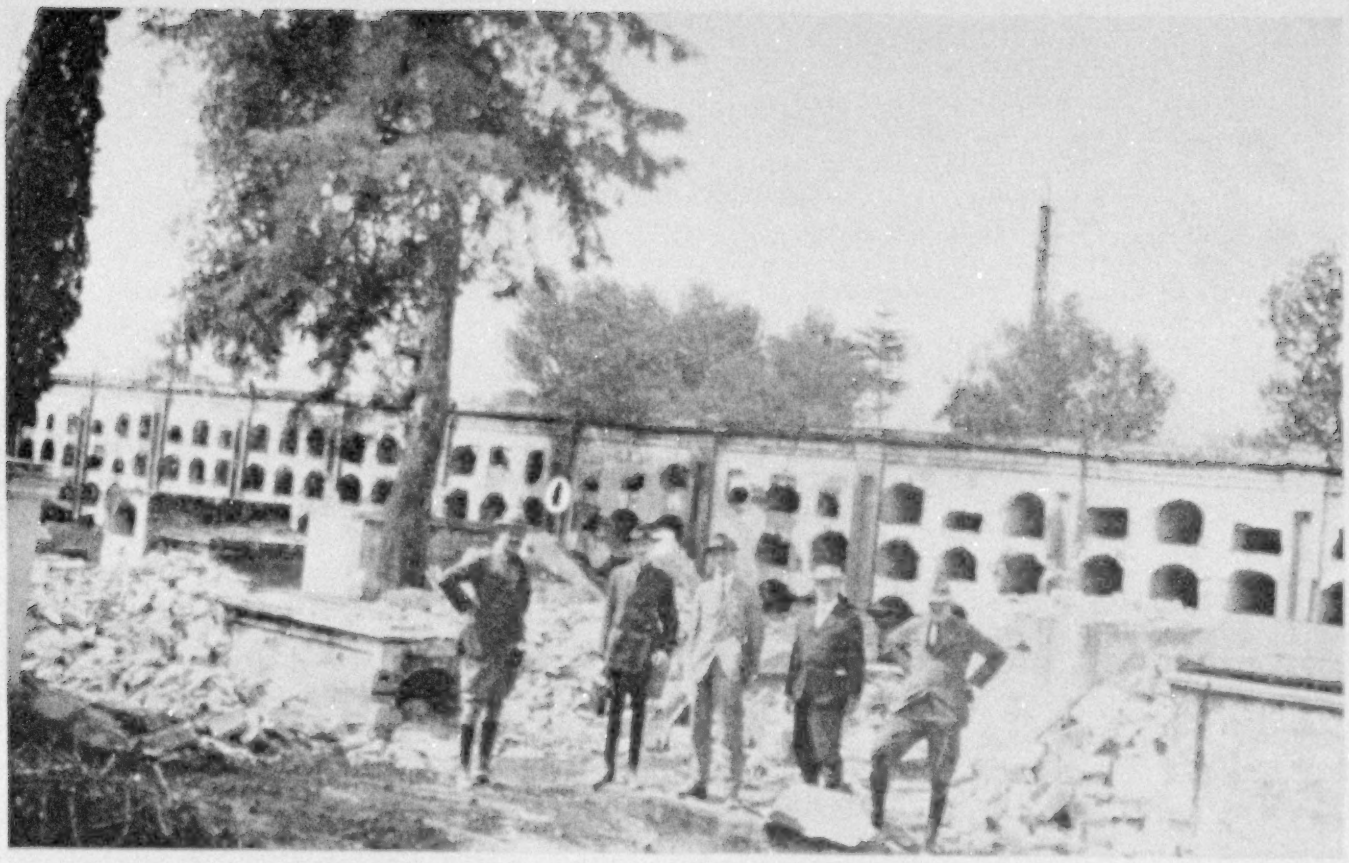
Photographs from W. G. Luckhardt

GUATEMALA CITY

Looking north on 16th Street east from 11th Avenue. Typical of the destruction of the houses.

ESCULA PRACTICA, IN GUATEMALA CITY

This handsome school building, in which the children of the republic were to receive manual training and instruction in the applied arts, had been completed, but not yet occupied, when the catastrophe occurred, reducing the edifice to a mass of ruins. The city of Guatemala has a population of 100,000, of whom nearly five-sixths are of European origin.



Photographs from W. G. Luckhardt

CEMETERY ADJOINING THE GENERAL HOSPITAL IN GUATEMALA CITY

Nearly all tombs were destroyed and opened. It is estimated that 11,000 bodies and four tons of human bones were gathered and cremated.



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Photograph from M. Rohde

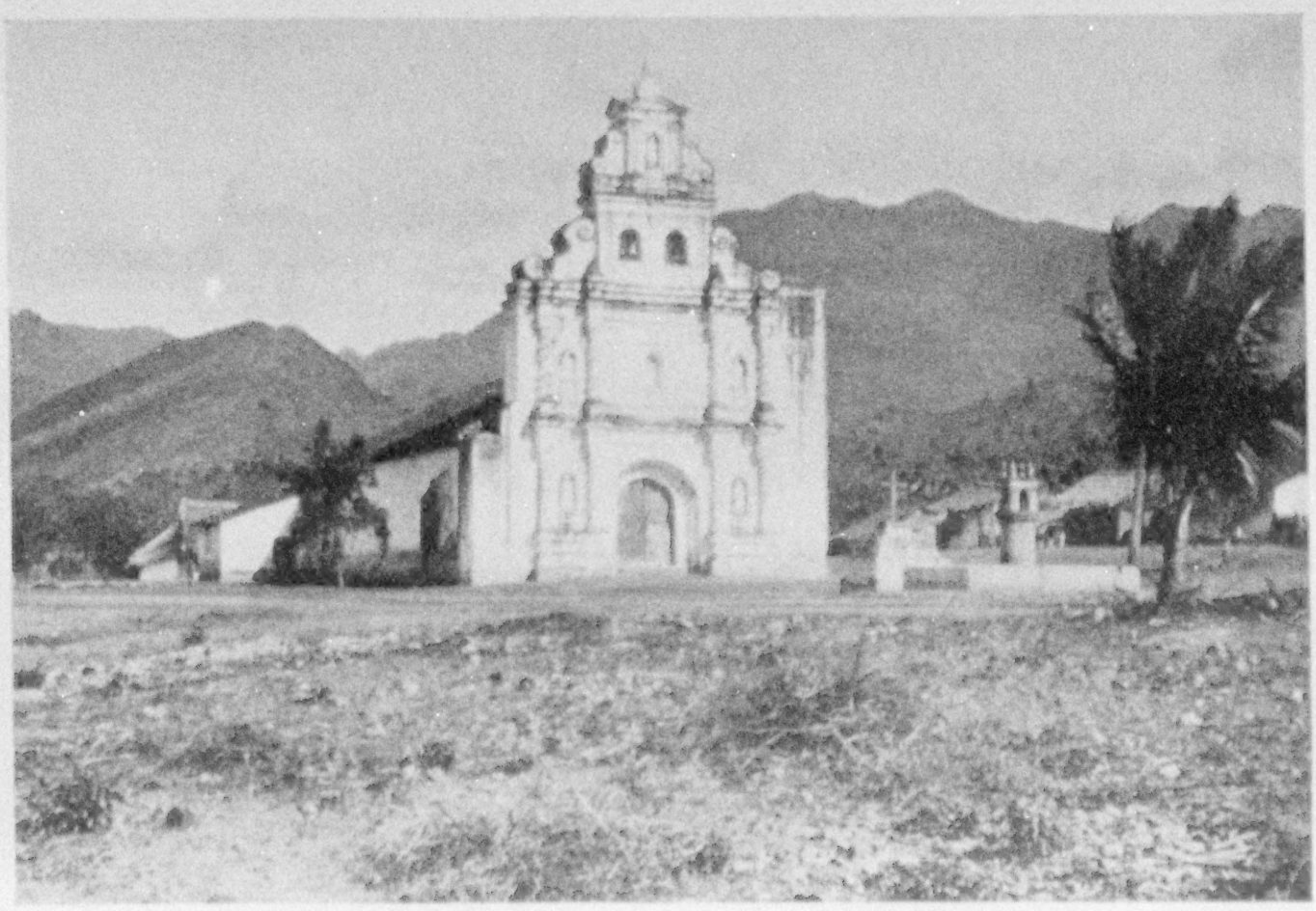
A PANORAMA OF CANTEL, GUATEMALA, SHOWING THE HUMBLE HOMES CLUSTERED AROUND THE CHURCH: NOTE THE THRONG OF WORSHIPERS ASSEMBLED IN THE PUBLIC SQUARE

GENERAL VIEW OF THE CHURCH OF THE CERRITO DE CARMEN

When the second capital of Guatemala was destroyed by earthquake and it became necessary in 1776 to choose another site, inasmuch as this ancient church had already stood 150 years, the Guatemalans determined to build their third capital around it (see page 204); but even these sturdy walls, after standing for 300 years, succumbed to the violence of the quake of 1917.

IN THE VOLCANO OF IRAZÚ, COSTA RICA, ACTIVITY IS NOW TAKING PLACE

This volcano has several craters, but the flow from these is mud rather than lava.



A CHURCH AT CAMOTAN, GUATEMALA, ON THE ROAD TO THE ANCIENT MAYAN CITY OF COPAN

An example of the splendid edifices erected by the Indians under supervision of Spanish priests. Camotan is a village of perhaps 500 population.

Photograph by Valdeavellano

THE ALTAR SCREEN OF THE CHURCH OF CERRITO DE CARMEN

This beautiful little church, the most beloved in the city, and regarded by many persons as the very symbol of the stability of Guatemala City, has crumpled and crumbled before the reiterated shocks. While the church itself has been destroyed, the image has been preserved and set up under a temporary shelter. The worshiper can turn from contemplation of the figure of Christ to see the ashes and the debris of "a city that was" spreading beneath him in a panorama of devastation.

volcanoes, and her principal southern port, Amapala, is situated on Tigre Island, a typical volcanic cone. Ancient lava flows and deposits of volcanic mud hardened into a light, friable stone are found in central Honduras. Earthquakes have not entirely forgotten this Republic, for only a few years ago the flourishing town of Gracias was utterly wrecked.

Nicaragua, almost equally with her northern sisters, has suffered heavily in the past from earthquakes and volcanoes. Leon, the metropolis of Nicaragua, was formerly located on the shores of Lake Nicaragua, near the base of Momotombo. This capital was destroyed in 1609 and removed to its present site, in the fertile valley of Subtiaba. Even here, however, it has not ceased to suffer.

Masaya volcano was active in 1522, when the Spaniards first entered Nicaragua, and again in 1772, 1858, and 1908. Momotombo, which is nearly always smoking, has had periods of great activity, especially in 1764 and 1852. Ometepe and Madera, with smoke issuing from their summits, dominate the scenery of Lake Nicaragua.

### A VOLCANO THAT BLEW OFF ITS OWN HEAD

But perhaps the most sensational eruption recorded in the annals of Nicaragua is that of Coseguina, at the entrance of the Gulf of Fonseca. In 1835 this volcano blew off its head and scattered dust far and wide. The black pall obscured the sun for days, and old Indians still fix their ages and other events in relation to "La Oscuridad Grande"—The Great Darkness. The dust settled thickly over field and forest, and wild animals as well as tame died by thousands from thirst and hunger.



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Photograph by Valdeavellano

RELIGIOUS SERVICES BEING HELD BEFORE THE RESCUED IMAGE OF THE CHURCH OF CARMEN

In Costa Rica the Cordillera rises to heights above 11,000 feet and boasts a string of volcanic peaks, some extinct and others occasionally active. Orosi and Tenorio are situated near the southern end of Lake Nicaragua, while the more famous peaks of Poas and Irazú are close to the old capital, Cartago, and the modern one, San José.

Both of these volcanoes have been active in recent years, and the latter (Irazú) had a period of marked activity in 1723 and 1726. Cartago was wiped out by an earthquake on September 2, 1841. Although it never afterwards rose to its former importance, it was rebuilt in part, only to be destroyed again on May 4, 1910, when the newly constructed Pan-American Peace Palace was overthrown.

### THE GOOD GIFT OF VOLCANOES

Lest the reader should close with the thought that these calamities render life and property too unsafe, be it understood that there are sometimes compensations. We all know that the annual flooding of the Nile in Egypt leaves a film of sediment over the valley and restores the soil for the next crop. Similarly, in Central America the volcanoes from time to time throw out a vitalizing dust that enriches the soil beyond the possibilities of costly fertilizers. Throughout the world, volcanic regions are ones of heavy population and great productiveness. There are losses—yes, but "out of death cometh forth life."

In the case of Guatemala City there are no compensating features, unless it be that this metropolis and diplomatic capital of Central America shall be rebuilt in a more modern and beautiful fashion. The city can hardly be removed to another site, since it is a railroad and commercial center, situated on the divide between the Atlantic and Pacific. Rebuilding has been slow because of the difficulty in obtaining materials, but, now that the Great War is ended, it should proceed apace.

# THE ISLE OF CAPRI

## An Imperial Residence and Probable Wireless Station of Ancient Rome

By John A. Kingman

IN NO part of Italy is the natural scenery more astonishing and delightful than in the Bay of Naples. The Italian travel literature of the last hundred and fifty years is rich in attempts to describe the picturesqueness of the district; but in the old days the tour usually ended at Naples, and by that time the fatigued diarists had pretty much run out of adjectives. Symonds, one of the best of the English writers on Italy, has done well by the locality; our Fenimore Cooper has written some agreeable bits about it, and the half-forgotten American poet, Willis, epitomized all descriptions when he called it a collection of beauties which seems more like a miracle than an accident of nature.

Owing to the striking contrasts caused by the meeting of mountains, sea, and mountain islands, much of the charm of the bay can be caught by the camera. The painter has little advantage over a machine which reproduces the sculptured forms exactly, whereas the colors and curious quality of the atmosphere are beyond both.

Many lovers of Italy feel that a country like Tuscany, with its softer colorings and gentler contours, is more restful and somehow more wholesome to live with, and that the Neapolitan scenery is too much like theater curtains come to life. Nevertheless, every person who arrives at Naples under fair skies and beholds this littoral for the first time cannot help being affected by its loveliness.

### A SIREN LAND CHARGED WITH CLASSICAL MEMORIES

Many of the visitors feel something deeper than admiration; for them all of the coast scenery from Miseno to Salerno has a strange and lasting fascination. Then there are the siren worshipers who have heard the mystic song and are content to let body and soul rest here forever; and to such willing victims of the picturesque, Naples is not a noisy, nerve-racking modern city, full of beggars and rogues and fleas; it is the old "new city"—Neapolis.

In the Bay of Naples the very atmosphere, to such Neapolitan specialists, seems more bland and limpid than elsewhere on the peninsula, lending to the distances a more magical and haunting charm; the curving shore is picked out and decorated with countless beauties, and high mountains descend abruptly to a tideless sea streaked with color, in which are set ethereal lilac-tinted islands.

This southern Siren Land, in addition to its gorgeous aspect, is so charged through and through with classical memories that it has much of the glory of Greece and the grandeur of Rome. From this rare vintage is expressed a heady beverage esteemed by siren worshipers and lotus-eaters, numbers of whom have lived hereabout for generations and who have found a particularly choice place of residence on one of its fairest spots—the mountain island of Capri, the Capreæ of the great emperors, Augustus and Tiberius.

### AN ESTHETIC WONDER OF THE WORLD

Viewed from Naples, Capri is a conspicuous object in the seascape twenty miles to the south. Its profile resembles the storm-tossed waves, or a sphinx, or a vast heap of clouds brooding at sea, or a sarcophagus, or a crocodile—depending on whether your viewpoint is that of Lord Byron, or Richter, or Willis, or Gregorovius, or Colonel Mackowen. Thus is seen the futility of description



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THE MOUNTAIN ISLAND OF CAPRI

From the vantage point of this Capri headland a magnificent panorama of the Bay of Naples and of the contiguous Campania is unfolded to the view of the visitor. Monte Solaro rises abruptly from the sea to a height of 1,080 feet.

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PUNTA TRAGARA, THE SOUTHEASTERN PROMONTORY OF CAPRI, AND THE THREE PRECIPITOUS ROCKS KNOWN AS THE FARAGLIONI

The ruins of a Roman house were exhumed on this promontory thirty years ago. It is a relic of the days when the Emperor Tiberius erected twelve beautiful villas on the island in honor of the twelve Great Gods of Roman mythology.

Capri is an esthetic wonder of the world. Its area is but six square miles; but surely nowhere else in the world are so much loveliness and so many interesting things packed in so little space. Artists have always flocked to Capri, each year bringing a fresh brood, confident in its ability to paint the unpaintable cliffs and sea. Some of these lingered on, some to marry the handsome Capri girls; and Howell's Englishman who came to the island for three months and stayed for thirty years is not a unique case in this respect.

Capri has the odd reputation of making its foreign residents eccentric, and there are many strange tales told on the island of their peculiar behavior. It has always been rather noted for its queer characters and human flotsam and jetsam.

### THE LURE OF THE GROTTO

The fame of the Blue Grotto has made Capri a show-place, and for upward of a hundred years, day after day, the tide of seasick tourists has flowed and ebbed. In spite of these daily caravans, however—in spite of the Anacapri Road, the Funicular Road, the Strada Krupp, much tasteless villa-building, and the vast hordes of Germans—Capri is still essentially unspoiled.

It is true that the Capri women gave up wearing their costume thirty years ago; that the old Greek forms have dropped out of the island speech; that the old days have gone forever; but, despite this, there has been a gain in convenience and comfort of living for both Capresi and Forestieri, even at a loss of picturesqueness; and the comforting fact remains that Capri's beauty is rugged and perennial, not to be destroyed by man.

After the murder of Julius Cæsar, in B. C. 44, there was confusion, civil war, until the battle of Actium produced a lasting peace and seated Augustus firmly on the throne. When Actium was won the future Emperor retired to the Island of Samos, and as a matter of pleasant association must have enjoyed island life ever after. In B. C. 29 he left Asia and returned to Italy, and before his three days' triumph at Rome visited Naples and near there heard Virgil read his Georgics. He also came to Capri and acquired it for a royal residence.

The statement in Suetonius that some withered oak branches came to life when Augustus landed, and that this so pleased him that he obtained the island, must be taken with the modern skeptic grain of salt. "The usual compliment to greatness," Mabie calls it.

Augustus, though doubtless as superstitious as any Roman, bought Capri because that was the object of his visit. These miraculous incidents have a way of happening all over Italy in all days and generations.

### THE EMPEROR MAKES A DEAL IN ISLANDS

It is not known whether Augustus had visited the island before. The Roman historians merely say that he received Capri from Naples, in whose possession it had been for hundreds of years, and in return gave the larger and more fruitful island of Ischia.

Islands were in style at this time. But Ischia, perhaps, was discarded because of its reputation for eruptions of the volcano of Monte Epomeo, one of which occurred in B. C. 92; and there were probably earthquakes, too. Besides, Capri was more intimate and exclusive and more easily transformed into an imperial domain than the much larger and more thickly populated Ischia.

In the opinion of the writer, who spent the greater part of one spring browsing about the Roman ruins on Capri, the property was acquired as much for state reasons as for private ones. In the first place, it was an outlying island which probably needed protection—a strategic point, logically destined to become crown property. Undefended and neglected, it could be easily captured; but a small garrison could hold it against any attack. The island at that time was twenty feet higher out of the water and even more inaccessible than now.

### PIRATES A PEST IN POMPEY'S DAY

Capri was the first point in Campania where the Greeks obtained a foothold, and Augustus possibly did a far-sighted thing by securing it for the Empire, thus preventing its seizure by enemies or by

THE WOMEN OF CAPRI NO LONGER WEAR THE PICTURESQUE NATIVE COSTUME

The attractive black lace veil is still seen occasionally, however. Frequently Grecian features are to be observed in the women, a reminder of their ancient ancestry (see text, page 216).



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THE ROAD TO THE LANDING PLACE ON THE SOUTH SIDE OF CAPRI

Photographs by Edith P. Kingman

ON THE RUGGED PATH LEADING FROM THE VILLAGE OF CAPRI DOWN TO THE WORLD-FAMOUS BLUE GROTTO

The soles of the shoes worn by the natives of Capri are made of rope, as a precaution against slipping on the steep rocky slopes of which the island is in the main comprised.

Photograph by Edith P. Kingman

BOTH ROMAN AND MEDIEVAL RUINS COVER THE SUMMIT KNOWN AS THE CASTIGLIONE

Important excavations unearthed walls, pavements, and bas-reliefs of rare archæological value. A few years later the thrifty peasants covered the ruins with soil and planted vines over the spot where once stood the palace of an emperor.

pirates. There was certainly the matter of pirates to be considered. They have always been a pest of the Mediterranean. At the time of Pompey's celebrated campaign against the Mediterranean pirates, 67 B. C., they were well organized and intrenched; they had naval stations and beacon towers in various places. Centuries later the English actually did seize Capri, in 1806, and called it the "Little Gibraltar." They might have held it, perhaps, to this day but for the ill luck and incompetence of Colonel Hudson Lowe, later Napoleon's jailer at St. Helena.

The ruin of the Capri Pharos, the ancient lighthouse, so close to the largest of the ruined palaces on Capri, is a paramount point in the archæology of the island. The selection of Capri by Augustus was most likely biased to a considerable degree by the fact that it was ideally situated for the Pharos. This was one of the most important lighthouses of antiquity.

The limit of this article does not permit of any elaborate disquisition on Roman lighthouses, but enough information exists regarding them to show that they were permanent, costly structures and abundant, too, not merely in Italy, but also in Gaul and Britain.

### PHAROS, ONE OF THE SEVEN WONDERS

The name Pharos comes from the enormous structure at Alexandria, built in B. C. 285, one of the seven wonders of the ancient world, and which stood until the thirteenth century. This lighthouse was very high, owing to the low coast; but the practical Romans, wherever possible, placed their beacons on commanding headlands and made them relatively short and massive. One of them, Tour d'Ordre, at Boulogne, on the French coast, is illustrated in an old print. It stood until the middle of the seventeenth century. This was probably typical—a strong masonry tower with a fire that was kept burning at the top.

As to details of design, the views that have come down to us, on medals, coins, reliefs, and Pompeian wall paintings, show a great variety of elevations.



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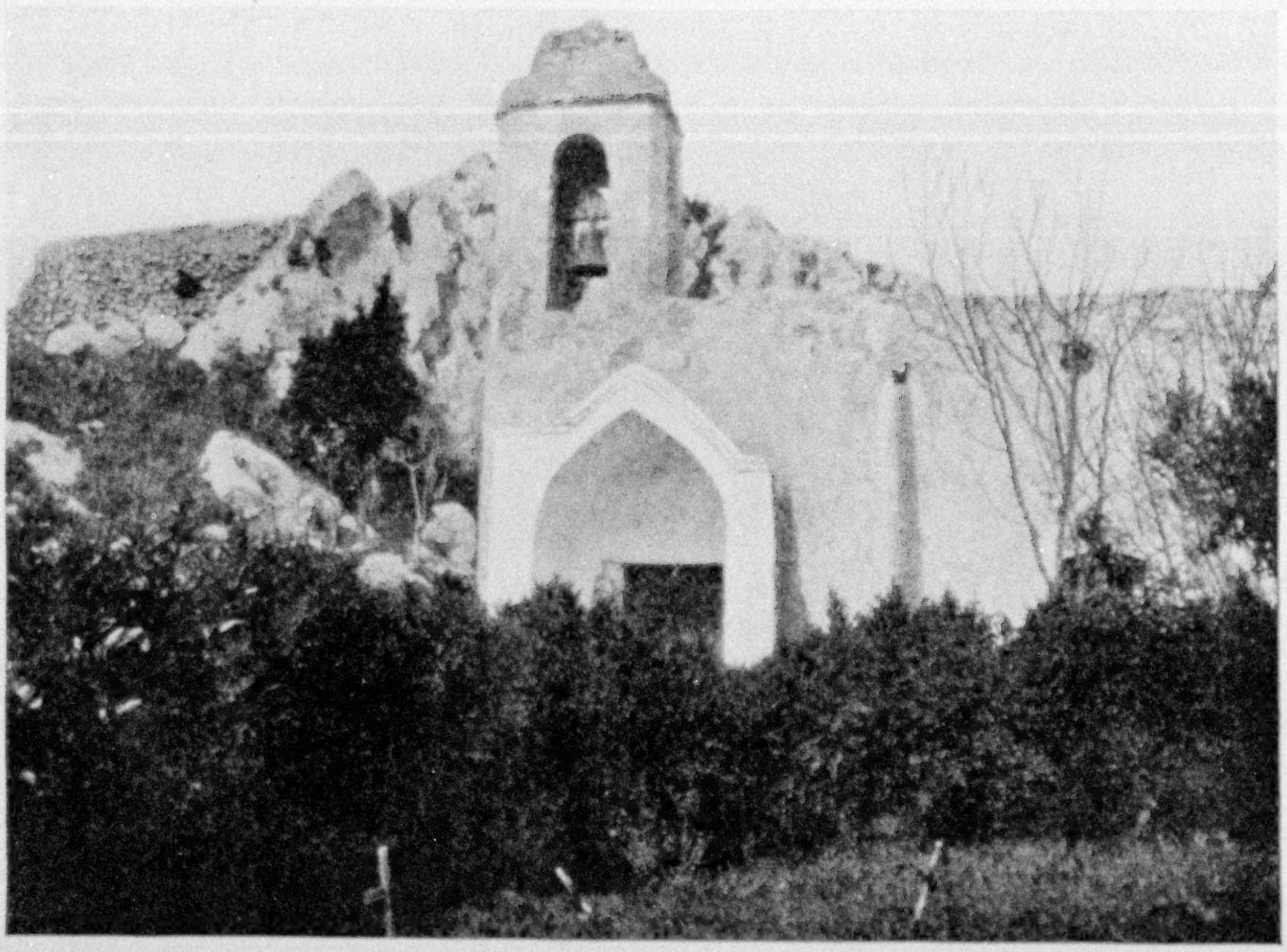


Photograph by Edith P. Kingman

EAST OF THE SUMMIT OF MONTE SOLARO IS THIS FORMER HERMITAGE OF SANTA MARIA CITRELLA

Not far away are the extensive ruins of the Villa di Tiberio. "Imperious Cæsar, dead and turned to clay, might stop a hole to turn the wind away"; and the corridors and vaulted rooms of the once magnificent retreat of the mighty Tiberius are now used as sheds for the cows of the workaday Caprians.

The existing lower portion of the Capri structure is a mass of burned Roman brick, forty feet square and fifty feet high, sufficiently conspicuous to show in photographs taken from Monte Solaro, at the other end of the island, two miles away. Its original appearance is entirely problematical. It may have had two or three stories. The tower at Boulogne had several stories and was 200 feet high. The Capri tower was not any higher than this, and in all probability not so high, as the elevation of the headland is about one thousand feet above the sea. It is one of the most valuable and interesting ruins on the entire island.

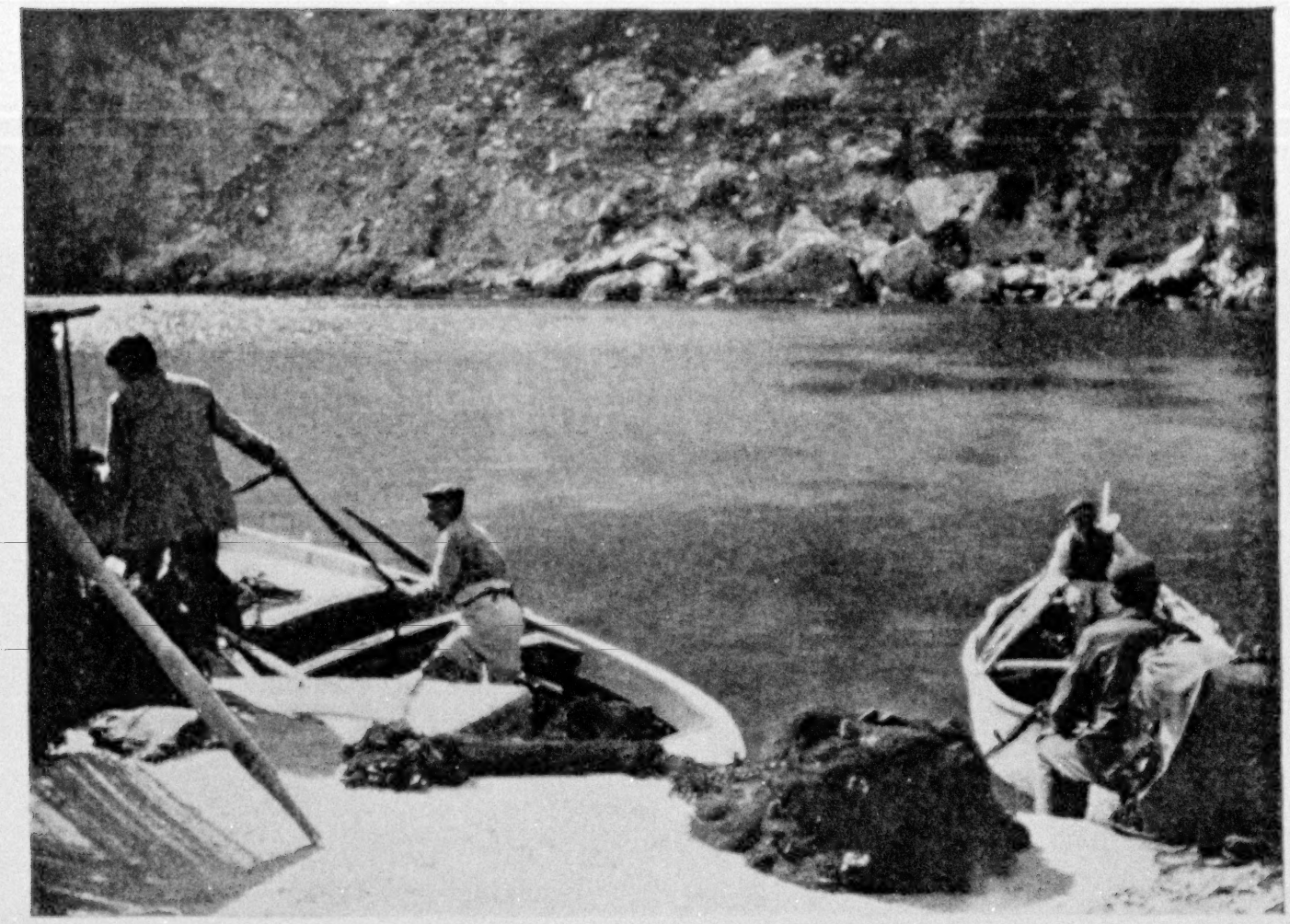
## THE ANCIENTS SIGNALED LONG DISTANCES

What right have we to assume that Capri was a signal station—an imperial wireless station of ancient Rome?

In the first place, we know that the ancients signaled in various ways and over long distances. They signaled by beacon fires, by beacon smoke, by pigeons, by flags, and by shouting from one sentinel to another.

Lighthouses are as old as the earliest chapters of the Bible. Beacon fires and beacon smoke were commonly used by the early Greeks, and there was no reason why the more practical Romans should not have employed improved methods, such as heliographing.

We do know that at the siege of Syracuse by Marcellus mirrors were employed by Archimedes; and though we may doubt the burning of vessels from shore by mirrors, as stated of that occasion, we can appreciate the blinding effect of many mirrors on the eyes of the navigators of the attacking vessels. That is what probably happened during that con-



Photograph by Edith P. Kingman

FISHING IS ONE OF THE PRINCIPAL OCCUPATIONS OF THE MEN OF CAPRI

Cultivation of the olive tree and of the vine are also profitable pursuits, but the inhabitants rely chiefly upon the annual tourists' crop for their livelihood.

flict. At any rate, it shows that the great Archimedes, at least, had found some use for mirrors other than the usual one.

### THE USE OF MIRRORS BY THE ROMANS

In imperial times the Romans had mirrors large enough to reflect the entire person; they even had mirrors of glass backed with tin instead of quicksilver.

Although there are no references in ancient writings to the use of signaling by mirrors, such a simple and effective method surely must have been employed. A most significant thing is the old story of a mirror on the Alexandrian Pharos:

"Alexander the Great placed on the top of the tower a mirror constructed with so much art that by means of it he could see the fleets of his enemies at 100 leagues distance"; and, to enter still more into particulars, "a Greek named Sodorus, after the death of Alexander, broke the mirror while the garrison of the town was asleep."

Now any tradition, no matter how distorted, has its roots in truth; and this one leaves us with the feeling that there *was* a mirror on the tower. The most likely reason for its presence there is that it was used to signal with in daylight hours; in other words, it was used for heliographing.

Signaling was certainly a common military practice among the ancients, and ancient writers, such as Virgil, Æschylus, and Herodotus, frequently alluded to it.

### CODE MESSAGES OF THE ANCIENTS

An interesting case of long-distance signaling by relaying is mentioned by Herodotus, in which it appears that certain tidings were sent to Xerxes in Asia by means of a line of beacon fires arranged through the Greek islands.

The ancients went further than sim-

THE ROCK-HEWN ROADWAYS OF CAPRI ZIGZAG SKYWARD AT DIZZY ANGLES

In ancient days the inhabitants were accustomed to mounting from one village to another by flights of steps.

Photograph by Edith P. Kingman

LIKE CLINGING IVY, VILLAS CLAMBER UP THE SIDES OF CAPRI'S ROCKY CLIFFS

The ancient home of the pleasure-loving Roman tyrant Tiberius is visited annually by 40,000 tourists in normal times.

ply announcing some prearranged message; they had codes and sent long messages. The Greeks signaled on one occasion 100 miles at one jump. This was from Mt. Chigri, 1,698 feet, to Mt. Athos, 6,500 feet.

The subject is one of absorbing interest, but little touched on by archæologists. Polybius, the Greek historian, has described ancient signaling methods in considerable detail, particularly an ingenious and elaborate method invented by Cleoxenus and Democlitus and perfected by Polybius himself.

Briefly, this method was about as follows, the letters of the alphabet being arranged on five boards:

| | | | | |
|---|---|---|---|---|
| A | F | K | P | U |
| B | G | L | Q | V |
| C | H | M | R | W |
| D | I | N | S | X |
| E | J | O | T | Z |

To send any letter, such as H, the signaling party raised two torches, because H is in the second column. Next, three torches were raised, as H is the third letter in its column. Very briefly, this was the theory.



XUM

The system was effective at about ten miles, and, though designed for torches, it could be easily modified for mirror signaling, as it contains the fundamental principle of the best modern system of signaling.

If the Greeks could invent such a *theory* of communication, it would seem likely that the Romans, a century and a half later, could have perfected its *practice* by using mirrors. Even our American Indians, having mirrors, signaled with them extensively, both on the plains and in the Rockies, the chief frequently being enabled to direct his warriors with certainty from a distant point overlooking the field.

### MIRROR SIGNALS SEEN AT A DISTANCE OF 160 MILES

Gallup's Hand Book of Military Signaling states that "under favorable conditions the distance to which messages may be sent and received is only limited by the curvature of the earth;" also, that "square mirrors are better than round ones only because they contain about one-quarter more reflecting surface for the same packing space." Round mirrors are used now. Mirror signals have been seen with the unassisted eye at distances of 160 miles. While this is, perhaps, a record, and although there is no statement as to the size of the mirror, it probably did not exceed twelve inches square.

The reasonableness of the Capri "wireless" station theory tempts one to speculate as to how much signaling was done and how it was done. It will be remembered that Tiberius, the unpopular successor of Augustus, spent eleven years of his reign on Capri, and without coming to Rome directed most successfully the affairs of the vast Empire. He even foiled the conspiracy of his trusted minister, Sejanus, who was supposed to have general charge of affairs after Tiberius retired to the island.

Though Tiberius went to Capri an old man, he was the actual ruler—emperor in fact—and his heavy hand was felt all over the Empire until the very end. With regular news bulletins and reports, received daily if need be, containing confidential information, he would be able to issue instructions and manage affairs as thoroughly as if he were in Rome.

### BEACON FIRES BY NIGHT, MIRRORS BY DAY

Possibly the *Publica acta* (Senate Journal) and the *Diurna acta* (authorized news) were sent to Capri by signal instead of by messenger. We can conceive that such a system, organized most likely under Augustus, must have operated very smoothly after some years of experience and practice. I hazard the theory of mirrors because of its simplicity and convincing character. Signaling by beacon seems too primitive for the wonderful civilization of the Empire. Of course, at night-time beacon fires would have to be employed; mirror signaling was a fair-weather method.

It is not entirely clear how the Roman lighthouses were managed. If the early representations on coins and reliefs do not mislead us, we may imagine a squat tower on a headland, perhaps 100 feet high and perhaps twelve feet square on top, with fire blazing all over the top platform. How long would the resinous wood fire last? During the long hours of darkness? It would not burn that long.

Obviously, the fires must have consumed immense quantities of wood and been replenished at intervals throughout the night. In periods of storm and rain the operation of the Pharos must have been a trying task. Just how the fire was replenished is not very clear. The Capri Pharos appears to have been provided with an outside staircase by which billets of coniferous wood could be carried up and thrown on the fire.

### ROMAN LIGHTHOUSES OPERATED EIGHT MONTHS OF THE YEAR

It is most improbable that any Roman lighthouse could have been operated throughout the entire year. It was kept alight during the passage of the grain fleets and possibly then allowed to go out. Navigation began in March and came to an end in November. According to Merivale, the sea was not used for one-third of the year.

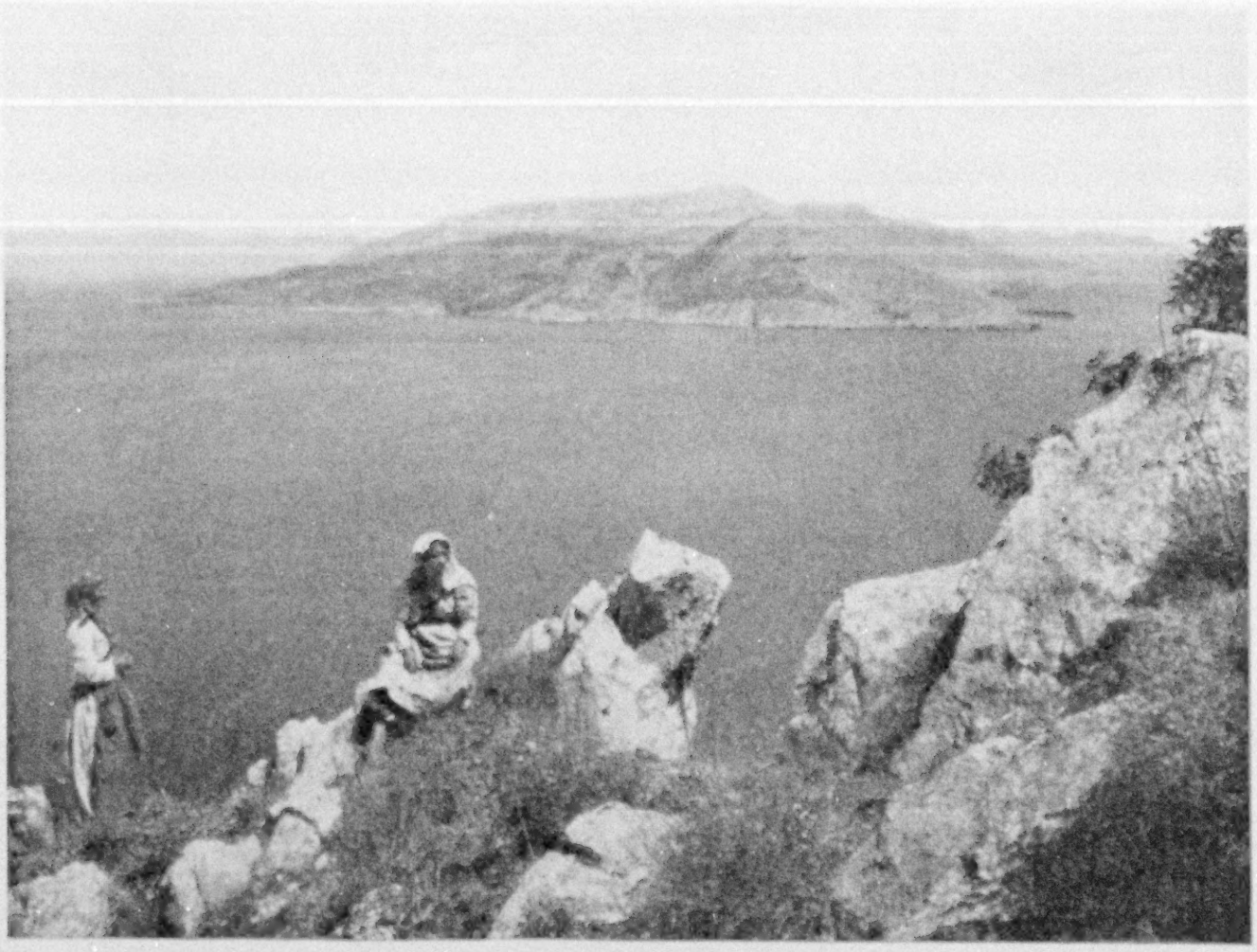
A little island like Capri would be deforested in a short time, a year or two,

THE PUBLIC SQUARE OF THE VILLAGE OF CAPRI WHICH NESTLES AMONG THE ROCKS NEARLY 500 FEET ABOVE THE SEA

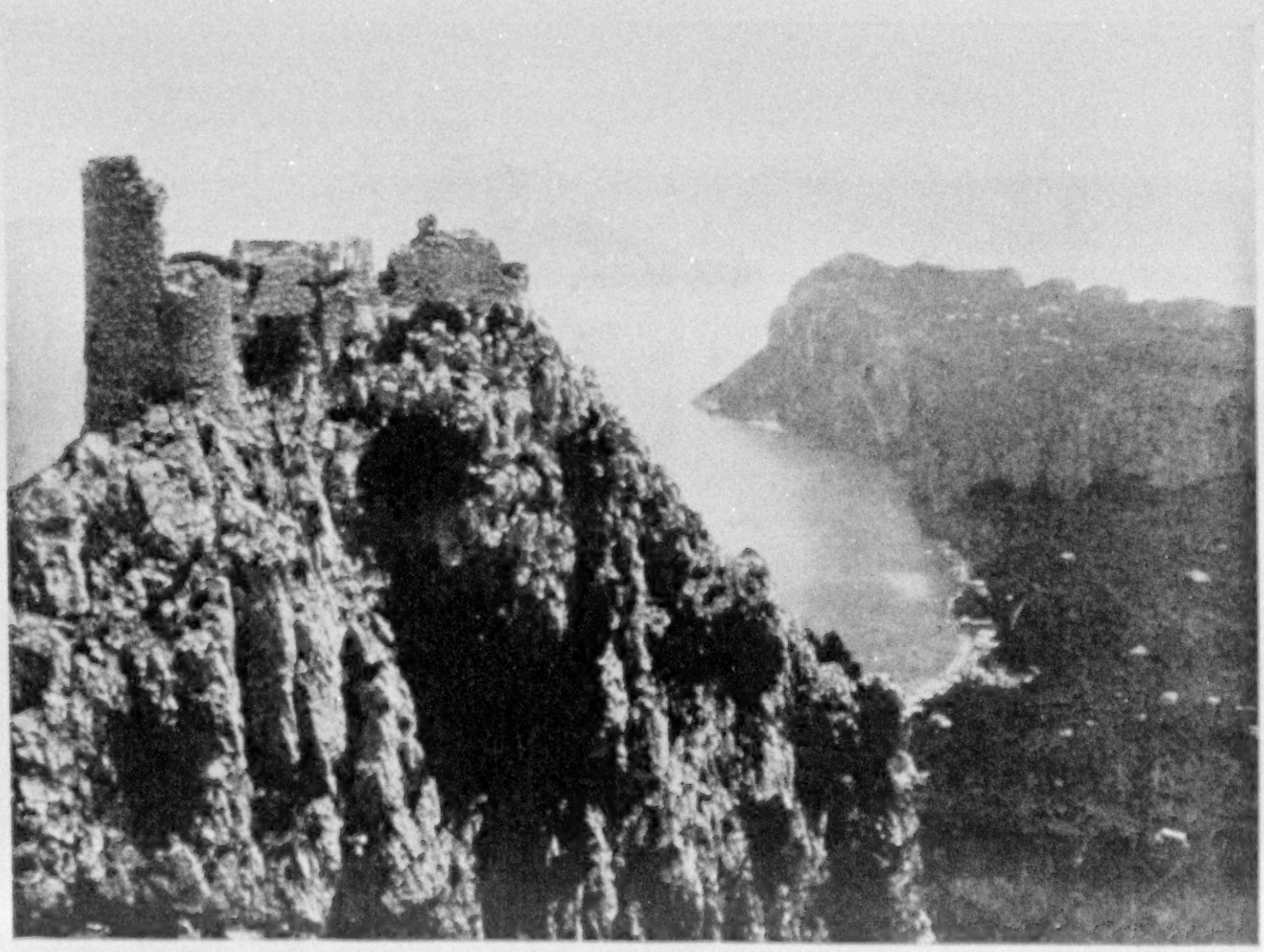
This is the center of life on the island. As its capital, the village has a population of four thousand.



XUM



OVERLOOKING THE ITALIAN COAST (CAMPANIA) FROM THE LIMESTONE CLIFFS OF CAPRI



A PICTURESQUE REMINDER OF THE FREQUENT VISITS OF PIRATES TO CAPRI IN OLDEN DAYS

Contrary to the custom of christening a castle after its builder, this historic pile, Castello de Barbarossa, bears the name of the freebooter who destroyed it in 1544.

with such a greedy Moloch swallowing untold cords of firewood every night. However, wood was a cheap commodity in the Empire. There were trackless forests all over it.

In England, and in fact everywhere on lighthouses, the exposed beacons of the ancients were used until recent times. The exposed "chauffer" type of beacon light burned, say, 400 tons of coal a year, in addition to vast quantities of wood. Coal fires were in use until 1816.

The mirror system would cost no money to operate, would be easy to use, and by it long signals could be sent. In times of stress, the primitive beacon would have to be employed when there was no sun. Under the practical rule of the Romans, beacon signaling was doubtless somewhat advanced and by it long signals could be sent, perhaps by making the beacon flare up by adding periodically small quantities of oil.

### THE ROMANS EXCELLED IN ENGINEERING

This is a mere surmise, without basis other than the general advanced character of Roman civilization, which lacked little we have today. The Romans were not artistic, but they were wonderful mechanics, hydraulic engineers, sanitary engineers, and great builders of all kinds of structures and highways. They had water pumps. They had perfected shorthand writing. The old writers do not tell us very much of Roman culture. None of them mentions a certain famous surgical instrument found at Pompeii, but it is there just the same.

The distance in an air line between Rome and Capri is 130 miles—too long for direct signaling; but if we look along the coast of the Tyrrhenian Sea we find numerous mountains affording points where the signals could be relayed. The frequency of the relaying would depend on the conditions. The highest point on Capri is Monte Solaro, 1,980 feet. Signals were probably not sent from here, but from the eastern headland. The Pharos was about 1,000 feet above sea-level. A line drawn from the Pharos to Monte Circeo, on the Campanian coast, just grazes the Island of Ischia; but the line of sight would be well above the island, as the summit of Circeo is 1,775 feet.

### RELAY STATIONS FOR MIRROR SIGNALING

On a clear day it is possible to stand on this storied summit and, facing north, see the dome of St. Peter's in Rome, and, turning to the south, see Ischia and Capri. "From the mountain promontory of Circe, now called Circeo or Circello, from almost any point on the Bay of Naples sufficiently elevated to get the sea horizon toward the west-northwest, we can see the high mass connected with the mainland by the Pontine marshes, whose low shores are invisible at this distance." There is a semaforo at Monte Circeo in actual operation today, just as there is also a semaforo on the "telegrafo" hill at Capri.

From Capri to Monte Circeo in an air line is 77 miles—a long shot for mirror signaling when we consider that the record for heliographing with the unassisted eye in America in modern times is 160 miles. Still it was not impossible with a large mirror in the clear air of ancient Italy. Probably also the vision of the ancients was exceedingly keen, and doubtless signaling was in the hands of those gifted with extraordinary powers of vision.

Nothing could have been easier than to increase the number of relay stations, although we may be sure the efficient Romans would signal over as long distances as possible.

### TACITUS REFERS TO LONG-DISTANCE SIGNALING

A suggested line of stations with no range more than 44 miles long is submitted to those of a speculative turn of mind. Rome to Monte Cavo, in the Alban Mountains, 18 miles; thence to Monte Circeo, 39 miles; thence to Monte Massico, 44 miles; thence to Capri, 44 miles. A Pompeian fresco of quite recent discovery shows Monte Cavo as being very conspicuous when viewed from the Palatine Hill. The clear summit is boldly visible. Perhaps the Palatine Hill was the "sending" station in Rome.

XUM

THE SIREN ROCKS OF CAPRI

The city of Naples was originally called Parthenope, in honor of the siren of that name, who drowned herself because Ulysses, hero of the Trojan War, succeeded in eluding her fatal embrace by putting wax in his ears so that he could not hear her seductive song.

FOUR NATIVES OF CAPRI

The two in the doorway are waiting for an invitation to dance the tarantella, for which they will expect a half franc each from the spectators. The dog and the cat are quite content to be left alone.

When Tiberius retired to Capri he took with him, among others, the mathematician and astrologer, Thrasyllus, who would be an expert on optics, if there were any such at this time. Moreover, the Emperor was the greatest general of his time and would be intimately acquainted with long-distance signaling in its every detail.

There is a passage in Tacitus that refers to signaling from Rome to Capri. This is as follows: "Meanwhile he [Tiberius] was upon the watch from the summit of a lofty cliff for the signals which he had ordered to be made if anything occurred, lest the messengers should be tardy. Even when he had quite foiled the conspiracy of Sejanus, he was still haunted with fears and apprehensions, insomuch that he never once stirred out of the Villa Jovis for nine months."

Photograph by Edith P. Kingman

HIS PICTURE HANGS IN MANY GALLERIES

This sedate gentleman is not a painter, but the most famous artist's model of Capri.

Without undue effort of the imagination, we can picture Tiberius receiving the signals from Rome announcing the treachery of Sejanus, and we can sympathize with him in this final distress. Added to the enforced early separation from Vipsania, his first wife, a lifelong sorrow; the disgrace of Julia, his second wife; the death of his splendid son, Drusus, and other personal domestic afflictions—this final disappointment, the defection of his friend and trusted minister, must have come as a cruel blow to the old man.

The fact that Augustus and Tiberius made Capri their special retreat gives it a deep and lasting significance. The island was the favorite home of them and their families for nearly seventy years. They are the two greatest executives in history ruling consecutively—both clear-headed, hard-working administrators, whose labors established the supremacy of the Roman Empire and brought about a wonderful period of peace unequaled in history, before or since. They both lived long, full lives

WHEN TIBERIUS RULED THE WORLD FROM CAPRI, HOW DID HE GET DAILY NEWS OF THE HAPPENINGS AT ROME? THIS HEADLAND MAY BE THE ANSWER

Some archæologists and historians surmise that he learned of the treachery of his trusted minister, Sejanus, by "wireless"—heliographic signals received by the station erected on this promontory.

and died natural deaths in an age when murder or enforced suicide or violent death of some sort was the almost invariable end of greatness.

After these towering personalities, Capri drops out of history and for some reason does not seem to have been patronized further by the imperial family.

But though Capri was never revisited by the emperors, the Pharos still guided the precious grain fleets through the channel between the island and the mainland for many centuries.

# SHANTUNG—CHINA'S HOLY LAND

By Charles K. Edmunds

President Canton Christian College

THE ancient Kingdom of Lu, now the Province of Shantung, is China's Holy Land. As the scene of many remarkable events in the early history of the people up to 200 B. C., and containing the highest of the five sacred mountains of China, which for two score centuries has been a great Mecca for devout pilgrims, this region would be justly famous. But it is particularly celebrated as the birthplace of Confucius and Mencius, philosophers and statesmen whose fame has gone over the earth.

In ascending the sacred mountain and in visiting the birthplace, temporary abodes, and the final resting place of Confucius, we are carried back to things hoary with age, and to the sources of the power that has so long held China in its grip.

The people of Shantung are, on the whole, rather conservative in their attitude toward foreigners and things foreign. The chief manufactures are strong fabrics of wild silk, ornaments of a vitreous substance like strass, snuff-bottles, cups, etc., straw braid, glass, and excellent rugs of many sorts.

The streets of Tsinan, the capital, are wider than in the south of China, where carts, and even barrows, are practically unknown. Here the deep ruts in the granite slabs of the street pavement indicate the stream of traffic that grinds along on squeaky wheels. The shops all open upon the street, the fronts being boarded up at night. The sign-boards, in colors gay and characters large, relieve the monotony of gray brick and uniform structure of the buildings.

## A STRANGE FORM OF CRUELTY TO CRIMINALS

One of the most striking buildings which one sees shortly after leaving the railway depot at Tsinan is the new police station and jail. In most of the large cities of China today there has been a marked improvement in the police system and in the treatment of criminals. But on one occasion, along one of the main streets of the city, we saw three men exposed in a neck-stock or cangue which has long been used in China as an effective punishment for minor misdemeanors. The culprits stood day after day on a prominent street, exhibiting on the cangue their names and offenses.

H. E. Wu Ting Fang, formerly Chinese Minister to the United States, was charged on his return to China with the revision of the penal code, and the more cruel forms of punishment are not so frequent now as formerly. Nevertheless the accompanying illustration (page 233), secured in Tsinan, shows that the terrible method of cage-executions was still in use up to a few years ago. After several days of public exhibition and starvation in a wooden cage, the victim was strangled by the removal of the bricks from under his feet, so that he hung on the wooden frame about his neck. Sometimes a mass of quicklime was placed on the floor of the cage so that the victim's feet dangled in it.

XUM

Photograph by C. K. Edmunds

THE NECK-STOCK OR CANGUE WAS FORMERLY THE INSTRUMENT USED IN PUNISHMENT FOR MINOR MISDEMEANORS

Culprits were forced to stand day after day on a prominent thoroughfare with their names and the nature of their offenses displayed on the heavy wooden yoke.

If there were space, we would refer in more detail to other evidences of the change now under way in China, such as the rise of militarism and the rapid development of educational facilities, perhaps the most important and significant change of all. Tsinan boasts a large and flourishing provincial college and many lower schools. But the chief interest of our journey lies outside Tsinan.

### CURBING "CHINA'S GREAT SORROW"

Only six miles away runs the Yellow River, known as "China's Great Sorrow," because of the frequent changes of its course and consequent flooding of this the most densely populated region of the whole country.

The last serious break in the dikes occurred in September, 1902, near Liu-Wang-Chuang, and the illustrations on pages 236-238 show the remarkable way in which Chinese "engineers" effected its repair. The original breach of 1,500 yards was reduced by building out from each side successive buttresses composed of kaoliang stalks (Barbados millet) and sacks of clay, each buttress being secured to the previous one by ropes and piles. The final opening of 55 feet was, after two disastrous attempts, effectively closed in March, 1903, by lowering a huge mattress of kaoliang stalks and clay by means of more than one hundred ropes, each eight inches in circumference, which at a given signal were let out one foot on each side.

The rush of water through the opening was reduced by the construction of a projecting groin on the upstream side, and to prevent canting of the mattress, due to the impact of the current, which had frustrated the earlier attempts, it was anchored to the opposite side of the river by many 15-inch hawsers.

The width of the river abreast of the

breach had been 600 feet, but was reduced to 300 feet by the formation of a sand-bar on the opposite side of the river. Hordes of workmen with baskets and barrows were set to work on the top of the dike bringing material to reinforce the repaired section.

### THE EQUIPMENT OF A CARAVAN

From Tsinan our journey was ten days by cart over typical rough Chinese roads in a general southwesterly direction. Our party consisted of myself, a student-interpreter and recorder, a cook, and three carts (with carters whose bad behavior we shall not soon forget), in which food, tents, clothing, and bedding packed in huge baskets were carried, but in which we did not often ride, for the carts had no springs. For this reason also our surveying instruments were carried on the shoulders of two men, a third being supplied for relief.

This caravan advanced about 25 miles a day. After the first stage to Taian, we were accompanied by a military guard of two so-called soldiers, who were expected to keep the unruly carters in check, but who proved to be nearly as bad as they.

Photograph by C. K. Edmunds

THE EXECUTION-CAGE IN WHICH A CONDEMNED CHINAMAN IS STRANGLED TO DEATH

Not to be confused with the cangue, or neck-stock (see page 232), this instrument of torture takes the place of Western civilization's gallows, electric chair, and guillotine. The victim, standing on a pile of bricks, is placed on exhibition with his head through a wooden collar. Day by day a brick is removed until the culprit is starved and strangled to death. Frequently there is an added refinement of torture in causing the man's feet to dangle in quicklime.

For the most part we lived on the country as we went. Sweet potatoes, egg-plant, cabbage, turnips, and carrots were easily secured. Good rice, such as we know it in south China, was scarce, but chickens and eggs, pork, persimmons, hard pears, a few peaches, and abundant dates, supplemented with a few tinned goods, enabled us to live sumptuously.

As a rule, we stopped at the regular village inns, crude and uncomfortable, but affording needed shelter for the whole party of eleven souls and three cart-mules.

The roads through this section of China are mostly ruts, which sometimes attain a depth of 70 feet in the loess deposits. For a good part of our way the road lay along the bank of a wide, shallow river cutting across the loess formation. To judge from the height of bridges and the markings on the land, the tributaries to this stream, although dry when we saw them, must be violent torrents during the rainy season.

XUM

Photograph by C. K. Edmunds

A DEVIL SCREEN TO KEEP AWAY EVIL SPIRITS

Chinese "devils," or evil spirits, unlike the more clever foreign variety, can only travel in straight lines. Hence the rich property-owner puts up a devil screen to keep them out just as a photographer makes a box light-proof because the rays don't like to turn dark corners. This blank wall lends itself to decoration of various kinds and soon the open space in front fills up with rickshas or itinerant barbers. Pneumatic-tired rickshas have now almost driven out the old iron-tired variety. While superstition is still rife in China, a rapid development of educational facilities is in evidence in Shantung.

This is the most densely populated region of the whole country. Villages are very numerous and they are wonderfully alike. Even the smaller hamlets have a grocery shop or so, and most of the larger villages have temples. Most of the temples have ancient trees in their courtyards, and tablets recording restorations in the reigns of various emperors from about 1500 A. D. down.

PLOWS DRAWN BY OXEN, DONKEYS, AND WOMEN

We found most frequent restorations made by the famous monarch Chien Lung, who reigned for sixty years in the middle of the eighteenth century.

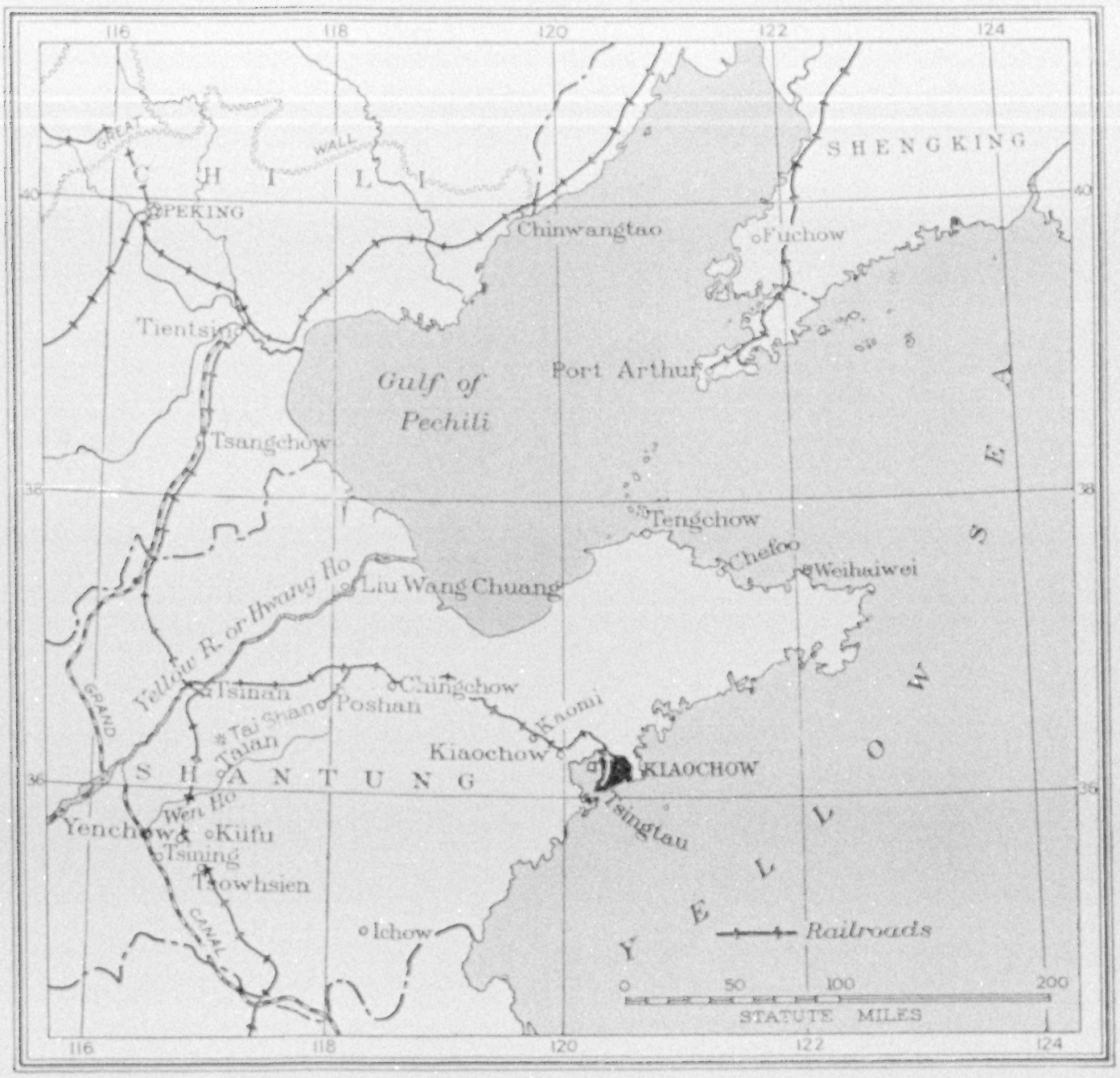
The village street is usually a streak of deep black mud. Outside the villages the roads are stony or sandy, as the nature of the land decrees.

The level and gently sloping parts of the country are closely cultivated. Farmers plough in the field with three donkeys abreast, or two donkeys and an ox, or a donkey, an ox, and a woman! The hills are generally very barren, owing to the ruthless cutting of all timber and the long-continued raking of the ground for leaves and grubbing of the soil for roots, the great population being sore pressed for fuel.

This process has robbed the soil of a natural fertilizer and lessened its ability to retain water, so that the hillsides are the more rapidly made bare and the stream beds raised, thus contributing to a chronic condition of floods and famine.

The chief products of the region are peanuts, sweet potatoes, straw braid, and peanut oil, many loads of which passed us on their way to the rail end at Tsinan, on huge barrows with very squeaky wheels, always pushed by one man, sometimes pulled by a second, while in case of an excessive load the man-power was assisted by a small burro.

After two days of heavy carting, about noon of the third day, we sighted the pagoda, which stands as a sentinel guard-




Drawn by R. M. Parker

SKETCH MAP OF SHANTUNG, CHINA'S HOLY LAND

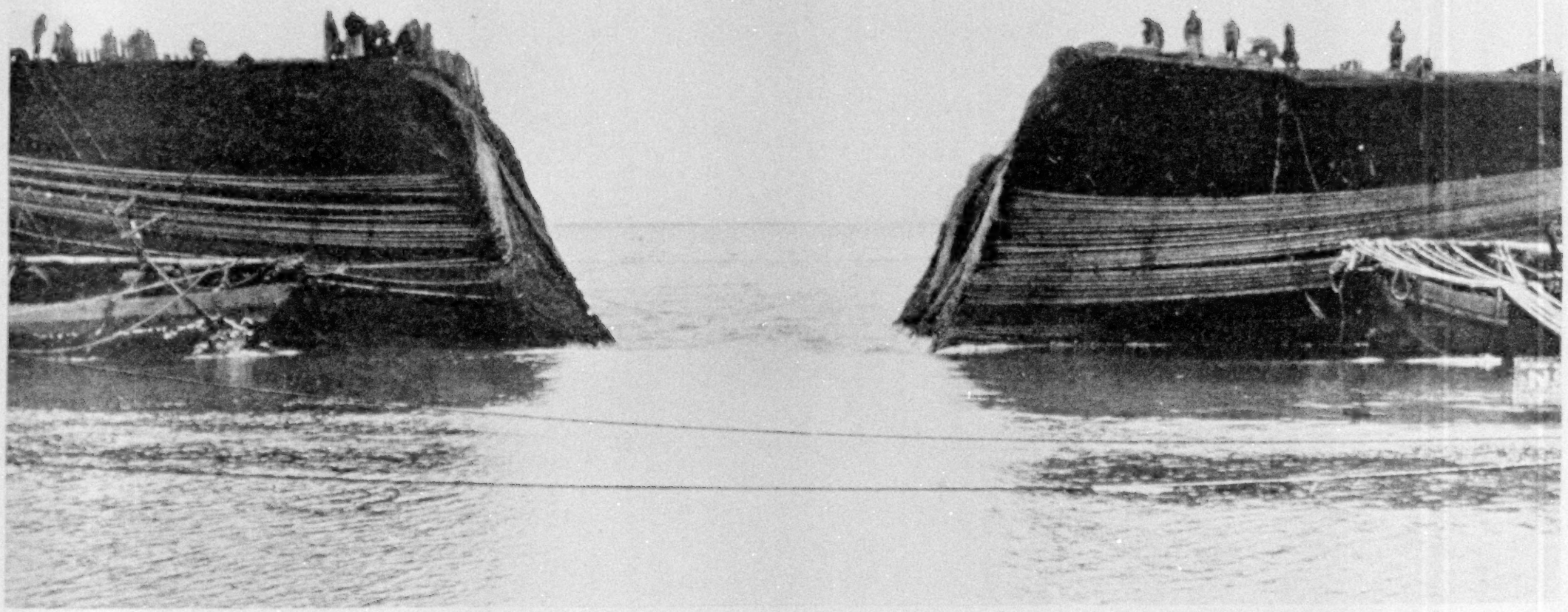
The area in black is the territory of Kiaochow, to the west and beyond the limits of which is the town of the same name.

ing this approach to the city of Taian, at the foot of Tai Shan. Taian can now be reached by rail, on the line running from Tientsin to Pukow, on the left bank of the Yangtze opposite Nanking.

According to Chinese records, Tai Shan was the "Holy Mountain of the East" and was visited and prayed to as a god by the patriarchs and monarchs of the hoariest ages. Certainly its sacredness was a well-established doctrine in the earliest historical times. It is mentioned in the Shu King (Book of History) as where Shun sacrificed to heaven B. C. 2254. It is accordingly celebrated for its historical as well as its religious associations. The monarch was supposed to visit it every five years, or at any rate once in his reign.

The ascent in the early days must have been far more arduous than it has since become. Probably only the most active potentates ventured to pay their devotions at the summit. The redoubtable Ch'in Shih-huang, builder of the Great Wall and unifier of China, did so 200 B. C., and left two obelisks to commemorate the fact, one at the top and one at the bottom of the mountain.

A hundred years after Ch'in Shih-huang, the Emperor Han Wu-ti planted cypress trees a few yards to the east of



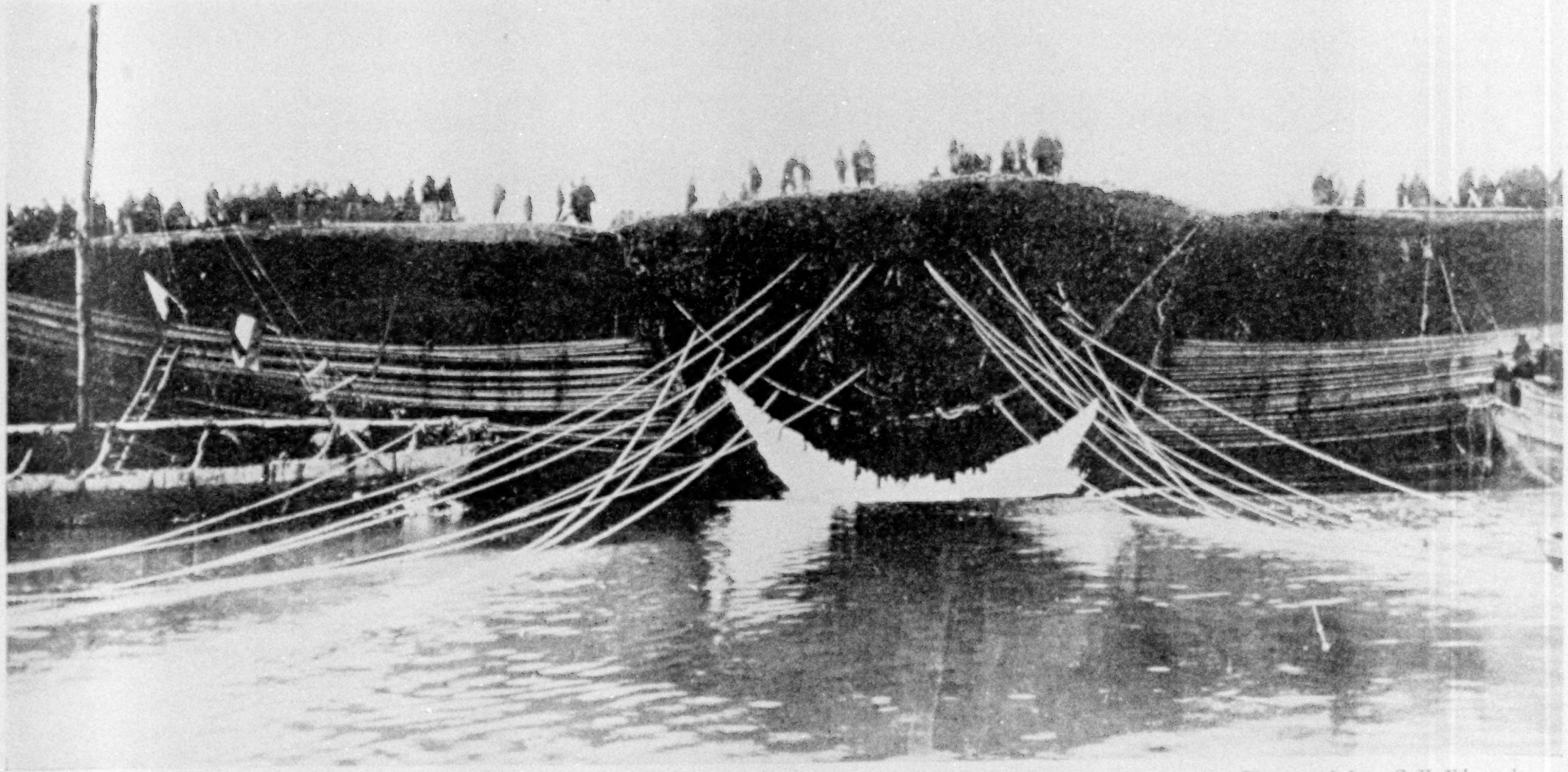
Photograph from C. K. Edmunds

NATIVE ENGINEERS DIRECTING SHANTUNG COOLIES IN CURBING THE YELLOW FLOOD OF "CHINA'S GREAT SORROW"

The last serious breach in the dikes, which in normal times control the waters of the Hwang-ho, occurred in September, 1902, near Liu-Wang-Chuang, and was 1,500 yards wide. Through it most of the river flowed. It was repaired by building out from each side dams in the form of a series of pakwerks of kaoliang stalks and sacks of clay, each pakwerk or buttress being joined to the previous one by ropes and piles. By this means the breach was reduced to 55 feet, and this, after two destructive attempts in which the lives of many workmen were lost, was effectively closed on March 16, 1903 (see illustration on opposite page), when a huge mattress was successfully swung into position. This turned the turbulent waters back into their proper channel. The rush through the opening was previously reduced by the construction of a deflecting groin on the up-river side of the breach, constructed like the pakwerk, and projecting some 120 feet into the current. The width of the river channel abreast of the breach had been 600 feet, but was reduced to 300 feet by the formation of a sand bank on the opposite side of the river.

XUM





Photograph from C. K. Edmunds

LOWERING INTO PLACE THE LAST MATTRESS OF KAOLIANG STALKS AND SACKS OF CLAY WHICH FINALLY FORCED THE YELLOW RIVER BACK INTO ITS BANKS AFTER THE DEVASTATING FLOOD IN 1902 (SEE PRECEDING PAGE)

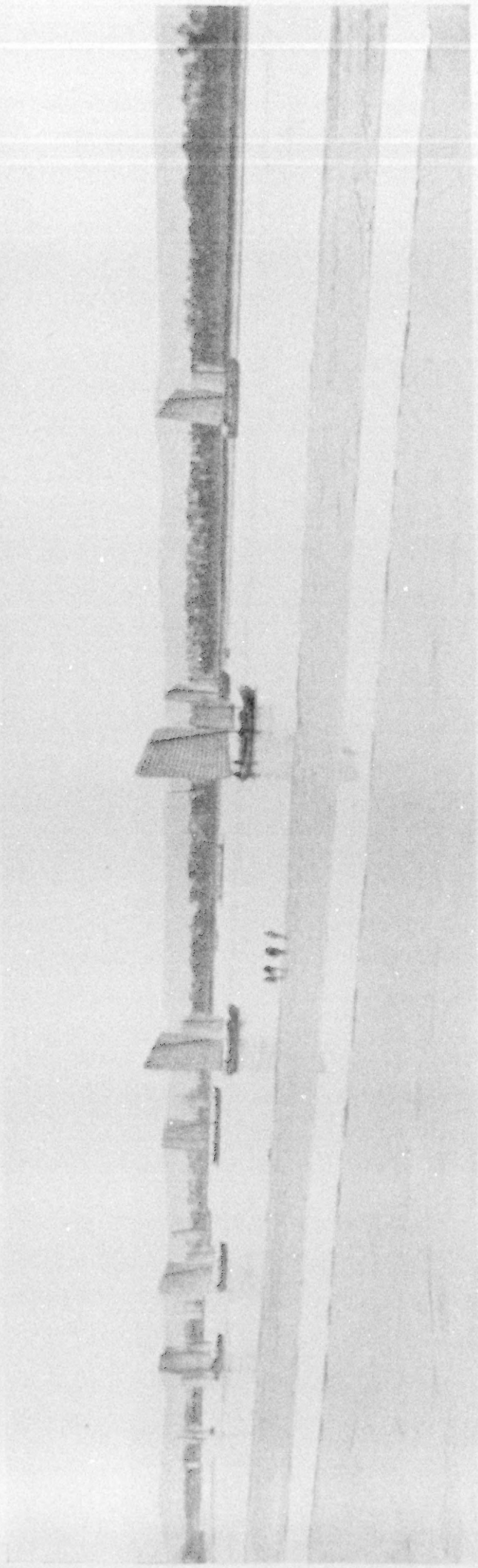
Before being lowered into the gap, the last gigantic mattress was anchored to the side of the river by many 15-inch hawsers, in order to prevent canting due to impact of the current. More than one hundred 8-inch ropes spaced closely were stretched across the breach and made fast to anchor piles. On these were then placed alternate layers of kaoliang stalks and sacks of clay. When these materials reached the level of the sides of the dam, the ropes were manned and, at a given signal, were lowered foot by foot. The kaoliang of which the mattress was made is a kind of sorghum, probably identical with Barbados millet. The core of the stalk, except for a very thin and weak covering, is entirely pith, but it has a matted bunch of fairly hard and strong roots which form its chief virtue for construction work. The stalk is about 6 feet long, three-fourths of an inch in diameter, and the bunch of roots, 3 to 5 inches in diameter. The face of the pakwerk, including the sides, is composed of the roots which mat and make a splendid surface for keeping out water.

Photograph from C. K. Edmunds

A TRAGIC ANT-HEAP OF INDUSTRY: TENS OF THOUSANDS OF COOLIES LABORING TO CHECK THE DESTRUCTIVE TANTRUMS OF THE YELLOW RIVER

After the breach in the dikes had been repaired (see pages 236 and 237), this army of workers was employed in rushing material to the danger point and reinforcing the embankment.

XUM



Photograph by C. K. Edmunds

THE TRANQUIL LOWER REACHES OF THE YELLOW RIVER AS IT CROSSES SHANTUNG

"China's Great Sorrow," this remarkable waterway has been justly called, for it has taken millions of lives as toll in its numerous floods and erratic changes of course. Once in a single week it swung its mouth southward a distance of 400 miles, emptying into the Yellow Sea instead of the Gulf of Pechili, as formerly.

this lower obelisk and built or rebuilt a temple there, the nucleus or forerunner of the present temple Tai Miao, which in its turn is the nucleus of Taian city.

### WHERE BUDDHIST, TAOIST, AND CONFUCIAN MEET

The principal business of this "very religious" city is to cater to the whims and wants of the thousands of pilgrims who annually throng her streets. Everything is on sale from little yellow mud tigers to portraits of the "Mother of Heaven" and fine brass works and silks.

Tai Miao is the "great temple" which has grown up since the time of the Cæsars, and probably has been mostly rebuilt toward the end of the Sung Dynasty (1020 - 1120 A. D.) to accommodate the large number who, though coming to worship at the Holy Mountain, are unable to make the ascent.

Passing the ferocious door-guards, we traverse the main hall of the temple, on the walls of which are fine, large frescoes representing a horde of officials and gentry making a pilgrimage to Tai Shan, and enter the inner shrine to behold the image of the "Goddess of Mercy."

Leaving the city by the north gate and journeying about a mile across the plain, we see Tai Shan towering high above all other peaks in the range, as if keeping solitary watch over the country roundabout. On its slopes every sect, Buddhist, Taoist, and Confucian, has its temples and its priests practicing manifold superstitions to attract pilgrims to their shrines. The number of beggars who beset the road to the summit indicates the great crowds of

Photograph by C. D. Jameson

TAMPING THE LAYERS OF EARTH ON NEW DIKE WORK ALONG THE YELLOW RIVER

A circular disk of iron or stone, about eighteen inches in diameter and from two to two and one-half inches thick, is attached to some ten pieces of rope with a man on each rope. With a song to keep the laborers in time, the disk is thrown into the air and falls with a most efficient thud. Piles of from four to six inches in diameter are often driven in this manner, the weight being slightly guided in its fall by one of the men.

pilgrims whose offerings support such a vast and wretched throng.

### TEN THOUSAND PILGRIMS A DAY

The great pilgrimages occur in February and March, as many as 10,000 persons per day making the ascent. The contributions of the faithful, even after deducting a good slice for the local authorities, not only provide the upkeep of the numerous buildings scattered from base to summit and of the far more numerous priests, but have sufficed for the construction and maintenance of one of the most remarkable mountain roads in the world, the Pan Lu, which, beginning just outside the north gate of the city, winds up to the very summit, some six miles of a broad, evenly paved pathway, the steep parts, which are frequent, since it rises 4,700 feet in five miles, consisting of well-laid steps, of which there are some 6,600 in all.

Every few hundred yards in the lower part is a temple, the most prominent being known as "Little Tai Shan," chiefly patronized by old women and young girls who can go no farther. Another of these lower temples is known as "The Hall of Ten Thousand Fairies" and another as "The Place of Thanksgiving."

All the way up, one is struck with the great number of inscriptions cut in the face of prominent rocks, sometimes in the most inaccessible places. These have been done at the instigation of pilgrims, who thus vie with each other in exhibiting their devotion.

All along the names given to special spots are very picturesque. The whole road is called "The Broad Way to Heaven." An especially large projecting boulder has its title cut deep in it, "The Pillar Supporting the Left Side of Heaven."

At one place, where the mountain stream has smoothed a broad, flat rock, are cut large characters, expressing prayers of the devoted. At another place, where the stream plunges over a high wall of rock, the latter bears the quotation from the classics, "A running brook is clear in itself."

For some distance the mountain slopes on each side of the paved way are fairly covered with trees, cypresses mostly up to 3,000 feet, cedars above that level. The upper part of the ascent is very steep and begins at an arch called the "Stopping Horse Arch" and mounts past the "Upper Gate of Heaven" to the last eighteen flights, along the sides of which heavy iron chains are hung for the use of pilgrims who reach this stage exhausted from their previous toils.

On the sides of the gulch appear inscriptions directing the pilgrims to "Enter gradually the Better Place" and "Cautiously approach the Region of Beauty." At the very top is the inscription, "Ten thousand generations adoring."

### AT THE TOP OF THE MOUNTAIN

These eighteen flights end in a massive portal which gives entrance to the court of the middle temple group. We note the highly ornamented roof of the central pavilion, the huge bronze urn for the burning of written prayers, and the tall bronze tablet commemorating the visit of the Emperor Wan-li.

Besides the chief shrine to the Buddhist "Nurse or Mother of Heaven," there are two other temple groups at the summit, one to Confucius, containing a replica of the large image of the Sage which we shall see in the temple at Küfu, where he was born, while on the very topmost knoll is one to the Taoist "Emperor of the Sky," Yu-Huang.

The view from the summit is wonderful, but not so wonderful as the reach of vision ascribed to Confucius and Yentzu on their visit two dozen centuries ago. That they saw the sea, as claimed, is not unlikely, for from an elevation of 5,100 feet the horizon is some 85 miles in radius, and the sea even now is only 100 miles away, but the strain on our credulity comes when we are told that Yentzu spied what he took to be a white silk curtain and something blue in front of it by the gates of Soochow. "No," said Confucius, "that is a white horse, and the thing that looks blue in the distance is a bundle of beans." "So great," adds the commentator, "was the holy perspicuity of the Sage."

Great, indeed! for Soochow is a full 400 miles away in a straight line.

### STONES THAT ACT AS TALISMANS

In all the cities and villages of Shantung, and even in adjacent provinces, stones from Tai Shan are much in demand as talismans. It is believed to be unlucky for a house to be so built as to face a turning or a cross-road. To ward off evil spirits, stones from Tai Shan are inserted in the wall of the house so situated, with the inscription, "A stone from Tai Shan. Who dares come this way?"

Evidently the day of leisure which our carters had enjoyed while we visited the Holy Mountain had spoiled them, for on resuming our journey they gave no end of trouble, until at last we were forced to present them to a district magistrate for reprimand and discharge.

After that we proceeded on foot, with a convoy of carrying coolies, straight to Tsining, on the Grand Canal, where through the magistrate we hired a cart and an excellent pair of mules with a well-behaved driver, who carried us to Küfu, the birth and burial place of Confucius, and back in three days by way of Yenchow.

On the road in the early morning we passed long lines of pack-donkeys, carrying grain and tobacco, and merchants riding to the markets on the backs of diminutive burros, accompanied by their attendants on foot.

In crossing the Wen-ho by a granite causeway we saw a number of fishing nets operated in characteristic Chinese fashion.

We reached Küfu in mid-afternoon,

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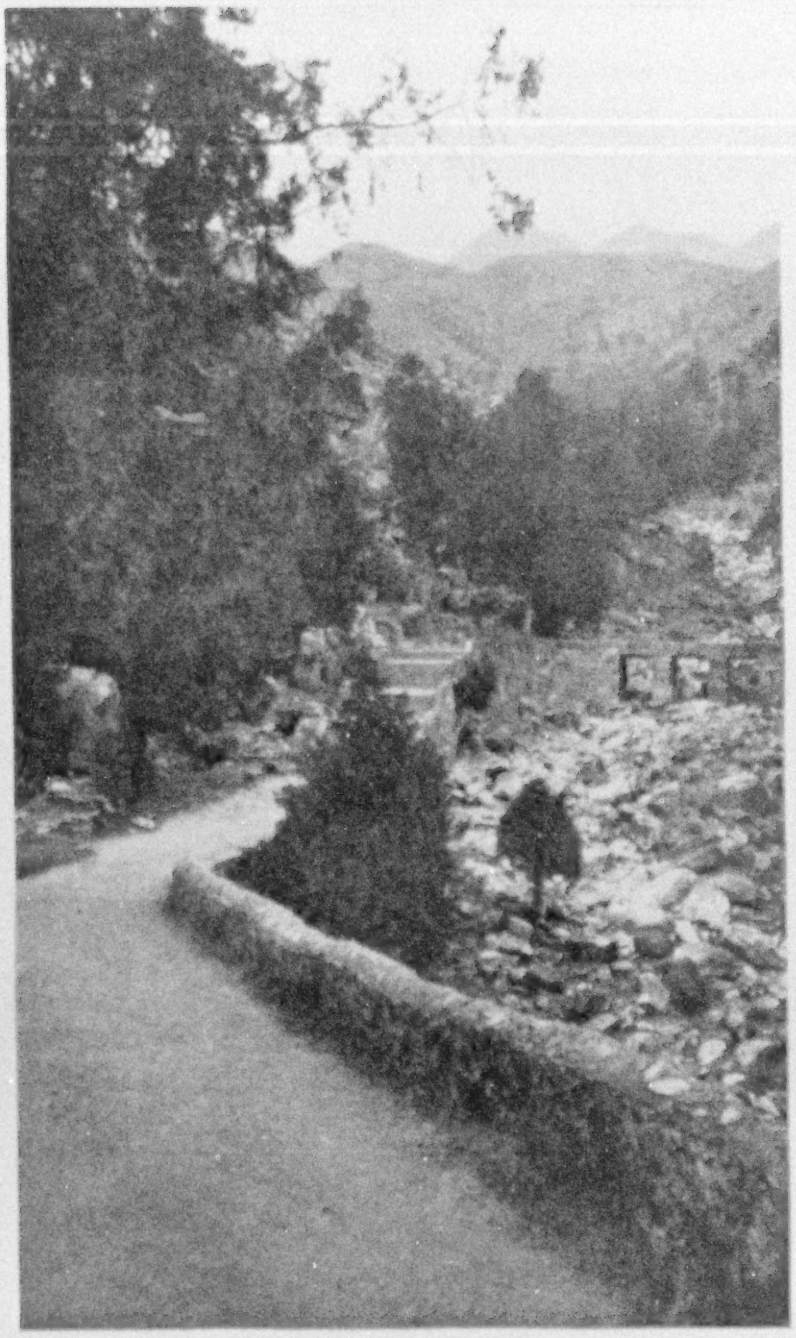


Photograph by Richard M. Vanderburgh

WHERE THE ASCENT OF TAI SHAN BEGINS

Like the Japanese Fujiyama, Tai Shan is the favored shrine of millions. During February and March nearly two thousand people to the mile may be using the paved road that leads to the summit from the city wall of Taian. Some pilgrims are carried to the heights in native chairs, while others, old and bent, but determined to reach the summit through their own exertions, fight heat and hardship and fatigue to reach the prize they seek—a pilgrimage to the sacred mountain where the Emperor Shan worshiped two thousand years before Christ and nearly fifteen hundred years before Confucius was born.

and, having sent ahead our military guard to secure guides for the temple and cemetery, we lost no time (although we did lose considerable money in gratuities) in seeing the wonders of this prototype of all Confucian temples throughout the realm.

When one has seen one temple in China, one has seen them all, but when one has seen all the temples in China, there is still the temple at Küfu to see. The buildings and arches are much the same as any other similar edifice, and there are doubtless larger temples, but there is a certain air of respectability, a certain atmosphere inherited from the past, that makes a deep impression on the observer.

The approach to the temple is made along a wide avenue at right angles to the axis of the temple grounds, being in fact a section of the main street of the city, treeless and shut in on both sides by high walls.

Within the gates, one's attention is first called to the small forest of stone tablets, five to ten feet high and three or four feet wide, which line the pathway, commemorative of imperial visits.

The buildings stand in a park of splendid cypress trees, one of which, said to have been planted by Confucius himself, has its ancient roots carefully inclosed in a marble parapet, and from its twisted stump a tall and vigorous stem, itself some centuries old, projects straight aloft to proclaim that the old root has sap and life in it even yet. As such it seems to typify or foreshadow a revival of that which is the most vital and worthy in the philosophy and teaching of the Sage.

HOW THE VENERATION FOR CONFUCIUS GREW

This Confucian temple, an enormous and magnificent place, occupying with its grounds the whole of one side of the town, is the model of the Confucian temples found in all the cities of China. It is almost certainly the growth of ages.

The probabilities seem to be that, though the family revered the tablets of

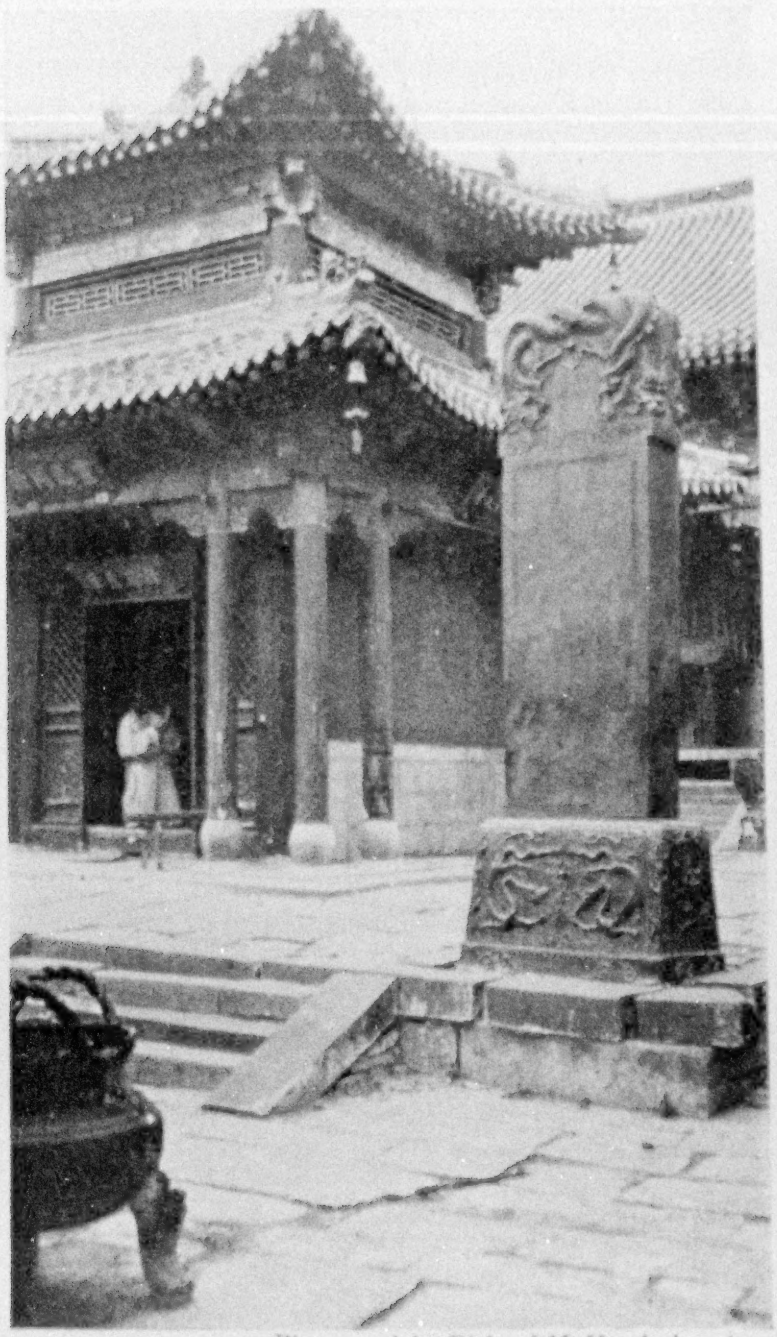
their great ancestor from the first, there was no public veneration of Confucius in any State temple for several centuries. As Confucian doctrines gained more and more recognition, no doubt a temple was erected near the birthplace of the Sage, and successive emperors, granting ever higher titles of dignity, no doubt enlarged and beautified the edifice.

There was a rather complete restoration of the old buildings in the reign of Yung Cheng (1723-1736), from which time most of the present establishment probably dates.

The main temple building stands on a terrace in the center of the grounds. The outer extremities of the high carved roof are supported by great stone pillars about fifteen feet high, ten on each side of the building.

The pillars at the front are round and magnificently carved with immense dragons coiling around each pillar. They are perhaps the most remarkable feature of the whole temple. We often carve in marble, but here are columns eight feet in circumference, some centuries old, carved four inches deep in solid granite. They constitute a real marvel of Chinese sculpture. The marble stairs and ramps leading to the shrines are also finely done.

The pillars on the sides and rear are octagonal and trace-carved in the favorite cloud effect with various figures.



Photograph by Richard M. Vanderburgh

A SOLID BRONZE TABLET IN A TAI SHAN TEMPLE

All along the Pan Lu, the great paved highway from the north gate of the city of Taian to the summit of the Sacred Mountain, six miles in length, there is an almost unbroken avenue of temples. The mountain is a Mecca for the Chinese of three faiths.

Within the main building, called "The Hall of Perfection," sits the canopied image of the great Sage, of which there are not more than two or three duplicates throughout the Empire. Ordinarily, Confucian temples do not contain an image of the Sage, but a simple tablet before which veneration and devotions are expressed.

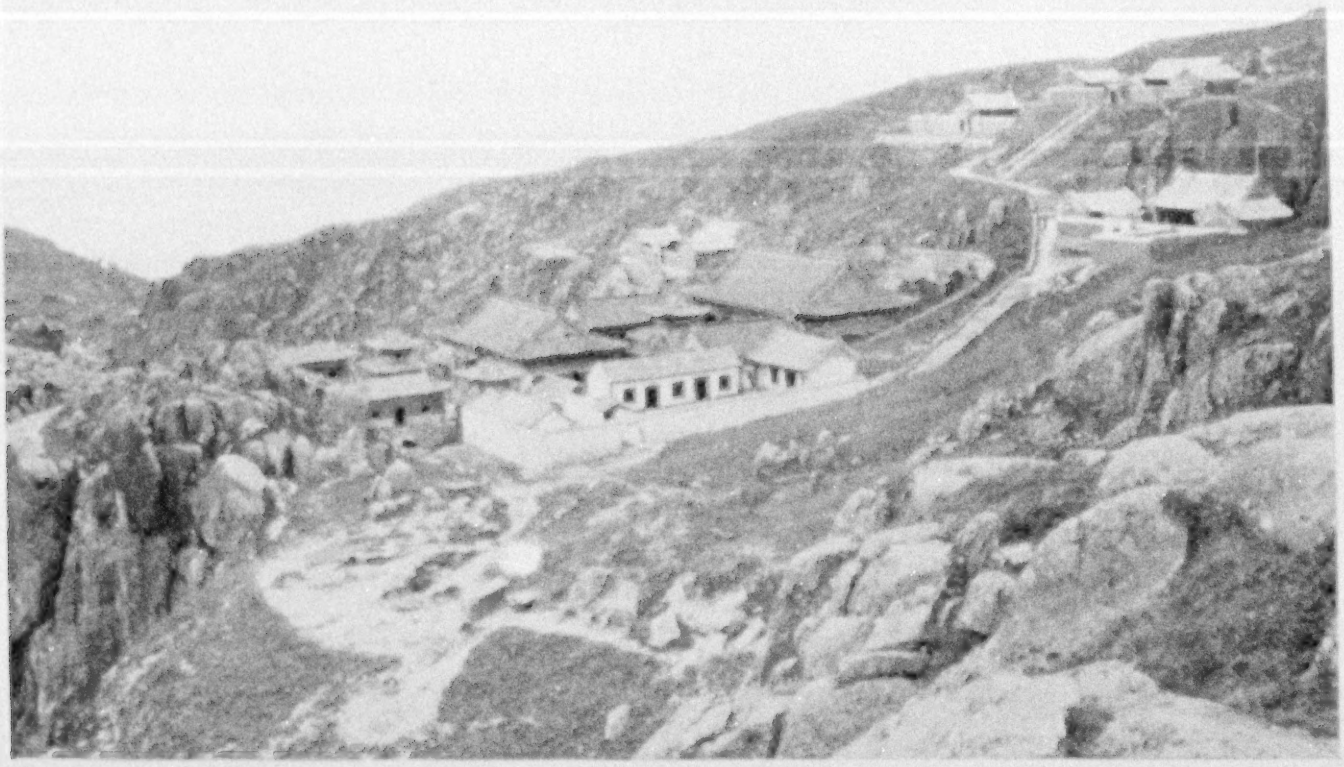
The Chinese are masters in fine carving and decoration, and their execution in this case corresponds well with the imperial rank and honors ascribed to the Sage. The size and beauty of the altar and shrine are imposing and in keeping with the dimensions and character of the building in which they are the center of interest. All is heavily lacquered and richly gilded. Handsome silk hangings serve the double purpose of ornamentation and protection.

The statue itself is of wood, larger than life size, and represents the Sage seated, holding in his hands the imperial tablet or scepter as a symbol of his sov-

Photograph by Richard M. Vanderburgh

THE WAY OF THE DEVOUT CHINESE PILGRIM, WHETHER HE BE BUDDHIST, TAOIST, OR FOLLOWER OF CONFUCIUS, IS UP THESE FLIGHTS OF STEPS TO THE SUMMIT OF TAI SHAN

In a climb of five miles the pilgrim makes an ascent of 4,700 feet, by means of 6,600 steps on a well-paved highway. To get an idea of the exertion which such a climb entails, recall that there are only 900 steps in the Washington Monument.



TEMPLES NEAR THE SUMMIT OF TAI SHAN

The contributions of the faithful who make the pilgrimage to the "Holy Mountain of the East" by the hundreds of thousands each year not only provide for the upkeep of the numerous buildings scattered from the base to the summit, but have sufficed for the construction of one of the most remarkable mountain roads in the world, the Pan Lu.

Photographs by Richard M. Vanderburgh

THE TOP OF THE MOUNT

Tai Shan was a sacred mountain for centuries before Confucius was born, in 551 B. C. Probably the great Sage marks the half-way stage on the long road that Father Time has trod since Tai Shan was first a scene of worship.



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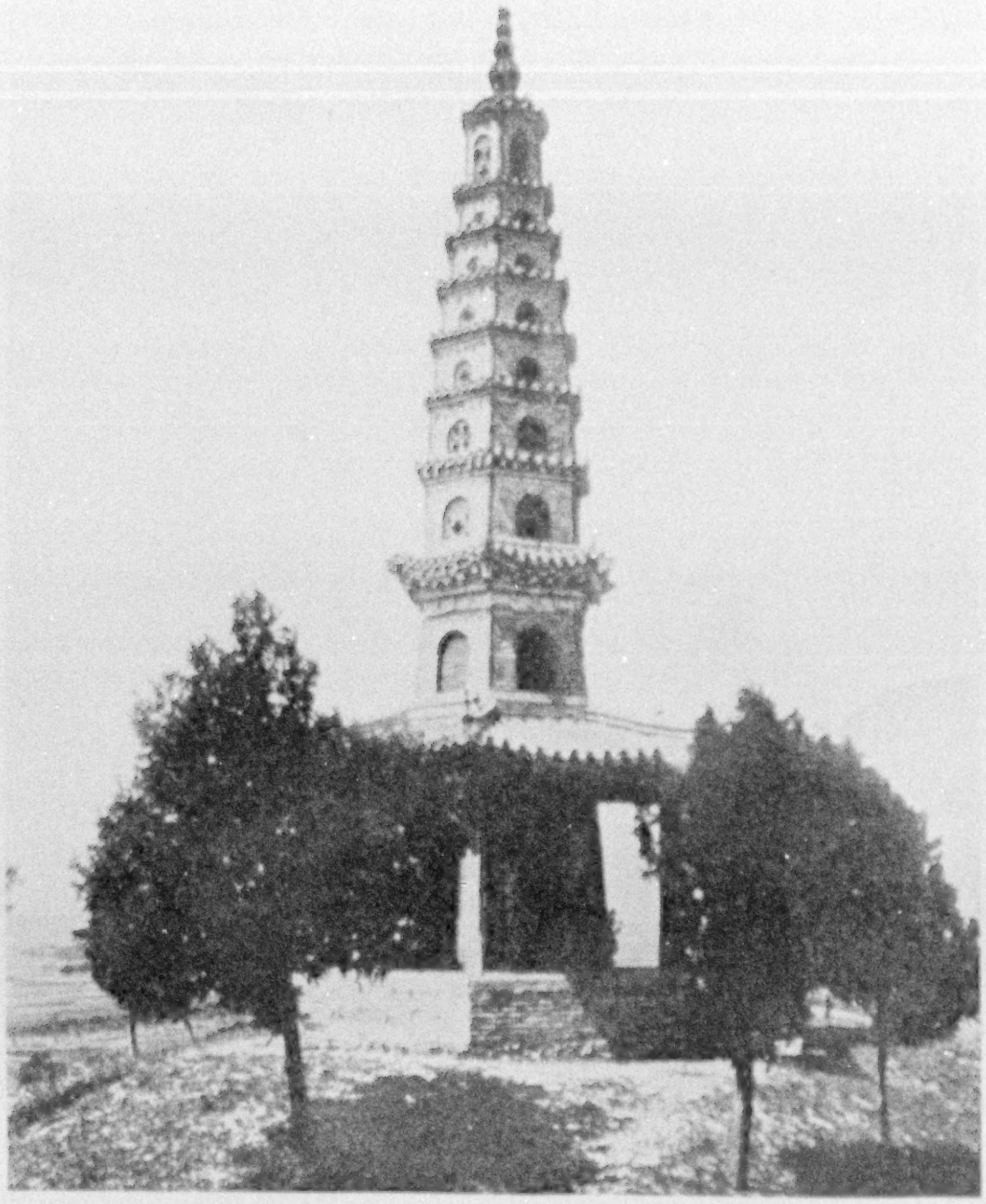


Photograph by C. K. Edmunds

THE PAGODA WHICH STANDS AS A SENTINEL GUARDING THE APPROACH TO THE CITY OF TAIAN, AT THE FOOT OF TAI SHAN

ereignty in the realm of thought. He wears an imperial hat of ceremony decorated with twelve tassels of red and green silk ornamented with pearls and representing the signs of the zodiac.

### NINE GARMENTS OF SILK FOR CONFUCIUS' STATUE

He is clothed in nine different silk garments, on which the twelve imperial emblems are embroidered, namely, sun, moon, stars, mountains, dragons, pheasants, altar-vessels, water-lilies, flames of fire, rice, axes, and classic characters. While nine of these were used for great princes, as well as emperors, the first three were exclusively imperial insignia. Thus is denoted the high rank with which Confucius has long been honored.

In front of the image of the Sage are handsome lacquer tables carrying the various sacrificial vessels of priceless porcelain and bronze used in the rather elaborate ritual. Below the richly decorated beams supporting the temple roof hang numerous inscriptions done in gold on blue, black on gold, and gold on red.

The decorations and enameling on the beams and pillars of the temple are exceedingly fine and rival in richness the decorations of the temple of the "Auspicious Year," at Peking, which is some-

Photograph by Richard M. Vanderburgh

THE GROVE SURROUNDING THE CONFUCIUS TOMB IN KÜFU

The buildings of the temple at the birthplace of the wisest of China's wise men stand in a park of splendid cypress trees.

times wrongly called "The Temple of Heaven."

On either side and facing the center of the room are the images of sixteen of the Sage's most famous disciples, all canopied, and in receding rows of two, three, and three, eight on a side.

One large room of the temple contains a very complete collection of ancient musical instruments.

The terrace on which the main building stands is flanked by two long rows of lower buildings, in which are tablets to Confucius' principal disciples and expounders. To the rear of the main building are also smaller buildings, one of which contains some 120 stone tablets, about 12 by 17 inches, cut to represent scenes from the life of the Sage.

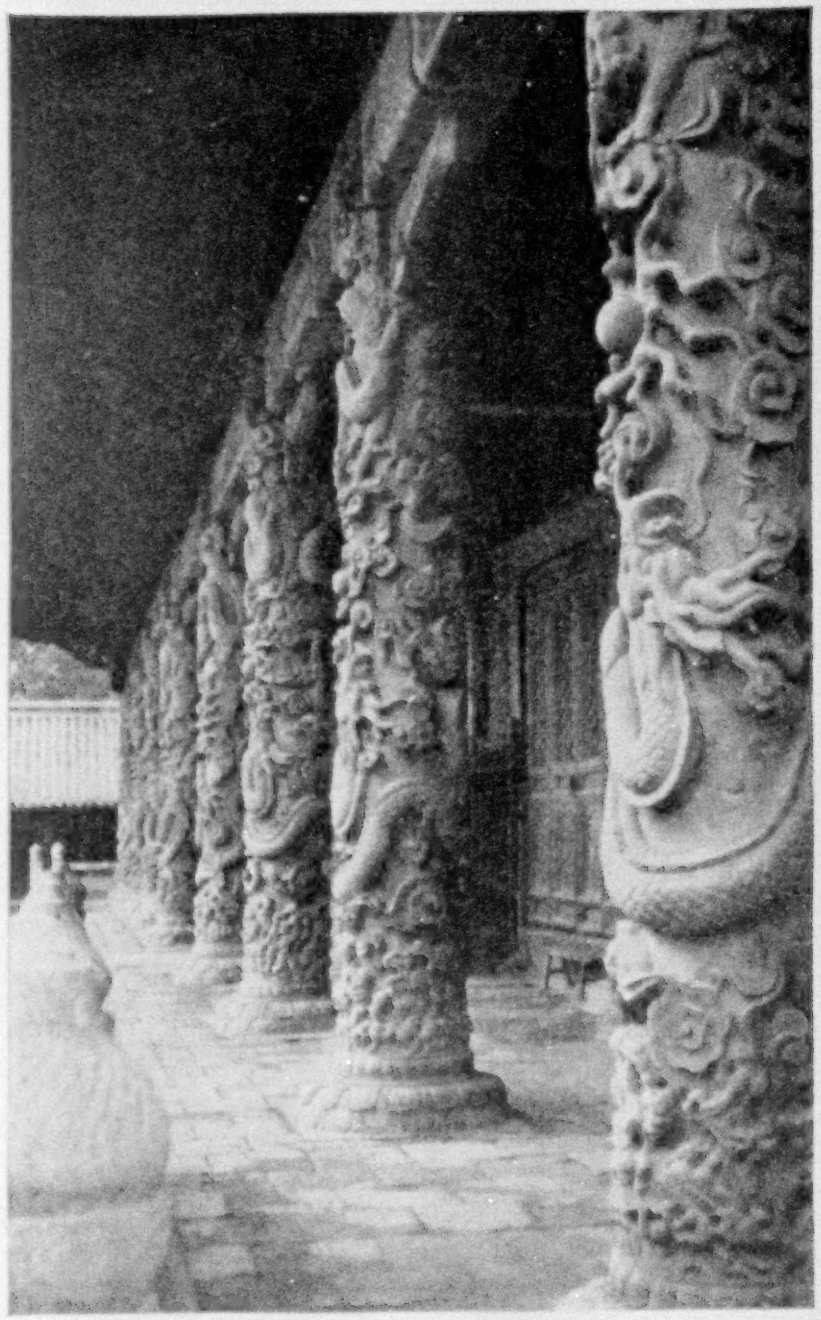
### A SHRINE TO CONFUCIUS' WIFE

The building which is of chief interest among the auxiliary shrines contains the tablet to the wife of Confucius. This simple and sole memorial to the Sage's spouse is housed in a "Palace of Rest" in the midst of beautiful trees. Whenever offerings are placed on the altar before the statue of Confucius, so are they also before this tablet to his wife, only they are less elaborate.

The temple grounds are separated from the rest of the town by the street that marks the site of the ancient village in which Confucius was born, the actual site of the house itself being marked by the Duke's Palace, for there is still a duke in Lu, the Holy Duke K'ung, the seventy-sixth lineal descendant of the Sage.

Four times a year the Duke worships in this temple with the appropriate ritual. Besides the contributions from devotees and appropriations from Peking, estates of many acres are devoted to the support of the temple and the supply of the great number of pigs, sheep, and cattle required for the sacrifices, for no symbolism of cheap paper images as substitutes for the real article, so common elsewhere in China, is allowed here.

The Duke is also in charge of the upkeep of the great Confucian cemetery, which lies outside the city, and having



Photographs by Richard M. Vanderburgh

THE STONE PILLARS OF THE CONFUCIAN TEMPLE AT KÜFU

The most remarkable feature of the magnificent edifice in the birthplace of China's great Sage is the series of granite columns, fifteen feet high and eight feet in circumference, upon which are carved immense coiling dragons. They constitute a real marvel of Chinese sculpture (see text, page 243).

paid our respects to him and, by virtue of a considerable fee to his subordinates, having obtained permission to visit this ancient burying ground, we go from the north gate of the city for about a mile along a wide avenue lined with cypress trees.

We pass a striking archway erected to the memory of a virtuous widow by her family, who took advantage of the extraordinary publicity of this avenue to secure for their beloved extra recognition.

### WHERE THOUSANDS OF THE PHILOSOPHER'S DESCENDANTS ARE BURIED

The portal to Sheng-ling, built in its present form in 1755 by the seventy-first lineal descendant of Confucius, gives access to a park-like enclosure of over 500 acres, containing the sepulcher of the Sage and of all his descendants. The total is undoubtedly several tens of thousands of graves. When a family holds together for 2,500 years, it grows into a big concern—about 70 per cent of the population in these parts, even the soldiers sent as escorts, claiming membership in the clan. The park is cared for by 200 attendants, whose families have inherited this duty for many hundreds of years.

From the outer entrance of the "Grove of the True Sage" an avenue of fine and ancient cypresses, about 150 on a side, leads to an inner inclosure, where are halls for worship and monuments of imperial visits from the Sung Dynasty down. There are some fine archways, and the buildings are not to be despised, but the really striking feature of the whole place is the splendor of the ancient trees.

As one passes inward the monuments become more and more ancient. The aspects of the park are rather those of age than of neglect. Presently we come to "The Holy Way," closed in by walls like "The Emperor's Way" from one palace building to another, thus denoting the imperial ranking of the Sage.

### WHERE CONFUCIUS AND HIS SON SLEEP

Finally, in very nearly the center of the whole inclosure, we come to two hillocks that cover the remains of Confucius and his son. In front of each is a simple stone altar and an inscribed pillar, the one before that of the Sage himself reading "Most Holy Ancient Teacher."

It is said that the earth forming the mound covering the body of Confucius has been brought from each of the eighteen provinces of the Empire. However that may be, it is certainly true that the influence of the Sage has been and still is felt throughout the whole extent of the great country; and the prophet himself, while in these latter radical days somewhat dusty, still bears on his shoulders the vast commonwealth of China, whose moral basis, with all its deficiencies, is surely a great memorial to a great and wonderful man.

Besides the Confucian temple and cemetery at Küfu, there are sanctuaries in honor of Yentzu, the favorite disciple and companion of the Sage, and in honor of Chou Kung, founder of the Duchy of Lu. Also seventeen miles south of Küfu lies Tsowhsien, where Mencius, the great expounder of Confucius, was born (B. C. 361), and there we find suitable temples in his honor and proper preservation of his grave. But space does not permit a more detailed reference to these, nor in comparison with the memorials of Confucius are they of any considerable value.

Evening shadows had already overtaken us because of our long delay before the shrine of the wisest of the wise men of China, and in order to make sure of accomplishing our return journey to Tsining in one day, we made an early morning start from Küfu and by 9 o'clock had reached Yenchow.

### THE GRAND CANAL, BEGUN 2,500 YEARS AGO

By dint of hard traveling during the rest of the day, we reached Tsining, on the Grand Canal, at nightfall, and found to our delight that a good missionary there had already arranged for the hire of a roomy house-boat on which to make the descent of the canal, though, to judge by the looks of the sail, it would take us a long time to go the 500 miles to the Yangtze; but we did cover that distance in about fifteen days, the last stage being made by steam-launch.

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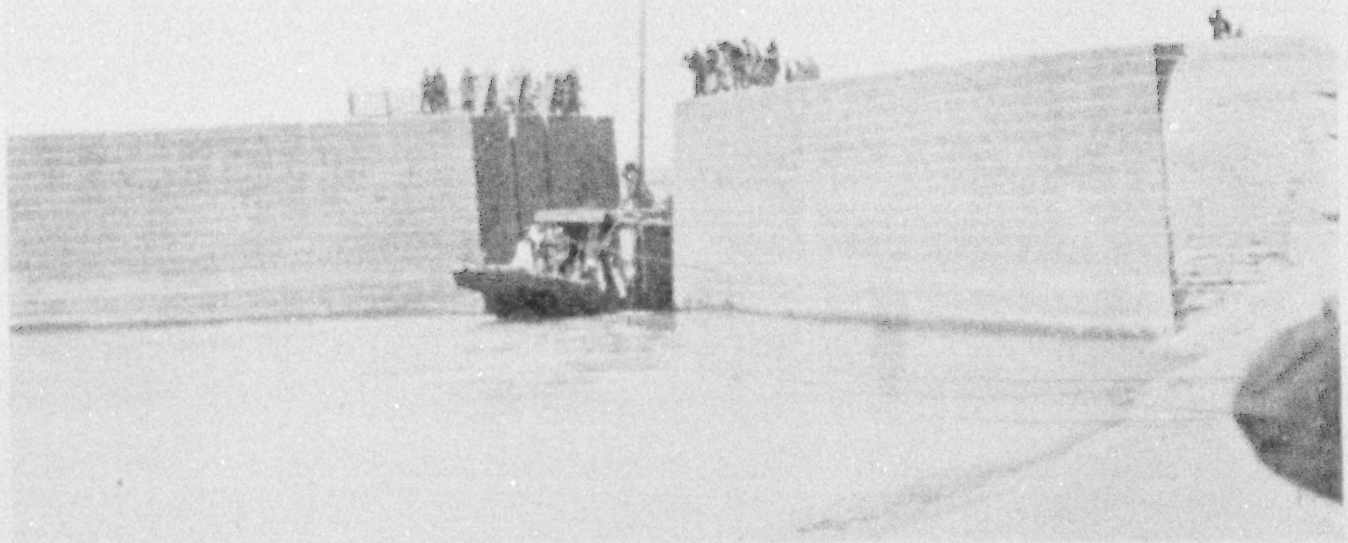
HOUSE-BOATS AND CARGO-BOATS ON THE GRAND CANAL: CHINA

Once the Grand Canal was a nine hundred mile highway over which the tribute of an empire was borne to the capital at Peking. Then came coast steamers and railways, and the Grand Canal, silting up from year to year, lost much of its former glory. But in China, wind-power on small sails is cheap and the man-power at the heavy oars is little dearer, so an American corporation is soon to begin dredging the Grand Canal.

Photographs by C. D. Jameson

NO DONKEY ENGINES OR ELECTRIC TRAMS TO OPERATE THE LOCKS OR TOW VESSELS ON THE GRAND CANAL

The natives, young and old, male and female, take their places at the heavy stone-set capstans. A boat is seen almost through the gates of a lock.



Photograph by C. D. Jameson

ONE OF THE LOCKS OF THE GRAND CANAL NEAR TSINGKIANGPU, IN THE PROVINCE OF KIANGSU

The fall from one side to the other is some five feet, and the boats are pulled up the rise by many ropes carried by capstans on each bank. A house-boat is floating through the gates. The central section of the Grand Canal, although it is now paralleled by the Tientsin-Pukow Railway, which makes possible a thirty-seven hour service between Shanghai and Peking, is largely used by the Chinese, who, through their peculiar skill as oarsmen, move heavy cargo-boats with a minimum of effort.

The Grand Canal, called in Chinese Yü-ho (Imperial River), Yün-ho (Transport River), or Yuliang-ho (Tribute-bearing River), extends from Tientsin, in Chihli, to Hangchow, in Chekiang, a distance of about 1,000 miles. According to the best accounts, it was commenced in the sixth century B. C. and finished only in A. D. 1283.

The most ancient part is the central section, between the Yangtze and the Hwai rivers. The southern section, from Hangchow to Chinkiang, on the Yangtze, was constructed from A. D. 605 to 617. The northern and most recent section, extending from the old bed of the Yellow River to Tientsin, was completed by the Emperor Shitsu in the three years 1280-1283 A. D.

Our journey on the canal began in the northern section, which is the most difficult to navigate; traversed the central part, where water is plentiful, and ended in the southern section, where we were again in rail connection with Shanghai, which had been our starting point two months before.

The chief features of interest were two: the locks and their operation and the variety of traffic and craft on this ancient inland waterway, which, originally completed as an easy route for grain transport to Peking, still plays an important local rôle for a very thickly populated part of the country, though of late years most of the supplies for Peking have been forwarded by sea.

## HOW THE LOCKS OF THE GRAND CANAL OPERATE

In the northern part, owing to scarcity of water, frequent locks or dams are necessary and are passed with difficulty. The ordinary canal lock consists of heavy granite bastions, forming a gateway and carrying on their opposing faces deep grooves, in which are set heavy timbers to form a dam.

These timbers are raised by means of heavy stone-set capstans.



XUM

Photograph by C. K. Edmunds

DUKE KUNG, THE SEVENTY-SIXTH DESCENDANT OF CONFUCIUS

In charge of the temple and cemetery at Küfu. Four times a year the Duke worships in the great temple with appropriate ritual (see text, page 247).

The lock officials often keep long lines of boats waiting behind a closed lock by making daily promises to open, but delaying day after day in the hopes of securing additional "inducements." Such congestion was always relieved by the arrival of our boat, because we carried official orders for control of the locks.

In its central and southern portions the Grand Canal, although badly kept up, is much more utilized, and several thousands of boats traffic on it. Of late years the development of launch-trains, composed of a steam-launch towing several double-decked barges for passengers and freight, has been extensive between such important places as Tsingkiangpu, Yangchow, Chinkiang, Soochow, and Hangchow.

## THE PEOPLE OF CHINA THEIR OWN BEST MONUMENT

Our return to the wonderful foreign municipality of Shanghai suddenly awakened us from the spell which our visit to southwestern Shantung, China's Holy Land, had put upon us. And yet, in coming back from a region where evidences hoary with age reveal the power that has so long held China in its grip to a modern city whose very existence testifies to the industry and energy of this ancient and honorable people, we appreciated the fact that the Chinese, as the only people who have survived from a remote past, are their own best monument.

Whether or not the earth which covers the mortal remains of their great Sage has really been brought from the then eighteen provinces of the Empire, it is true that in these latter days this Sage of old still holds sway throughout the land, and it is an interesting fact that the renaissance of China today is in China's thought closely associated with that teacher whose face at that remote period was toward the more ancient of the ancients, in imitation of whom he saw his country's only hope.

It is, therefore, natural that in 1913 the President of the Republic should have attempted to establish the new nationalism by appealing to the people's loyalty to Confucius and things Confucian.

# THE DESCENDANTS OF CONFUCIUS

By Maynard Owen Williams

Author of "Russia's Orphan Races," "Between Massacres in Van," etc.

DAINTY Miss America motors her way to the Country Club dance, her tresses held in place by an unobtrusive yet effective net made of human hair.

To her this is one of the new necessities that appear as if by magic and help her to preserve her beauty for an appreciative audience. To thousands of rosy-cheeked, raven-haired maidens of far Shantung the making of hair nets from the discarded queues of their brothers is their only means of livelihood.

The almost invisible net serves fashion to preserve for another hour the loveliness of a moment. But the making of hair nets enables whole villages of wrinkled old women of Shantung to put a little more food into ever-hungry stomachs.

The dictates of fashion say that the net must be as fine as spider web and much stronger, yet the hair from which the net is made is the coarsest hair that grows on human head. Miss America insists on absolute cleanliness, yet those nets are woven in a thousand smoky huts. Every modern scientific process is utilized to fit the product of unwashed workers for the vanity dresser of the most fastidious beauty.

"Know thyself," says Dame Nature to the world's people, "and nothing is impossible. Shantung and Miami Beach are sisters."

### AMERICAN FASHIONS FEED FRUGAL CHINESE

When the speedy roadster made hair nets a necessity, the hunger pressure in a remote province of 30,000,000 relented a little.

When the American male emerged from the woolen of former convention and donned the dapper suit of cool pongee, all the silkworms in Shantung had to work overtime, and their masters added a strip of pork to the family dish. A pongee-clad crowd at Bar Harbor means a better-fed population in Weihaiwei.

An American woman wears some Chefoo lace, and, thanks to her and the purchases of her friends, almond-eyed girls are being trained in mission schools 8,000 miles away.

The doughboy back from the war is also a booster for Shantung, though perhaps he doesn't know it. As he tells of the ever-smiling Chinese whom he saw making roads in France, he testifies to the fine qualities of some of the world's best laborers.

### HOW THE SHANTUNG COOLIE DID HIS SHARE OF WAR WORK

The Shantung coolie did his fair share of war work. A hundred and fifty thousand of him went out to better living conditions and a wider outlook when the British troopships steamed away from his peninsular home. Hundreds of him dropped shovel and seized gun or fought with clubs and axes when the breach at Château-Thierry yawned.

Now some of those Shantung coolies are being returned to their homes with new thoughts and ideals, speaking Pidgin-French, Pidgin-English, and what-not, but with wonderful tales to tell of the men by whose sides they fought.

I saw them there in Tsinan and Tsingtau—a bit cocky over their supply of ready cash, addicted beyond conversion to the cinema, but straighter, cleaner, and more alert than they were before. When China wants railways built or canals dug, here are the boys who showed the best Allied engineers what loyal labor really was.

Nor will they have to wait long. An American corporation is only waiting for better transportation facilities before beginning to dredge once more the Grand Canal, which was binding China into an empire two centuries before the Great



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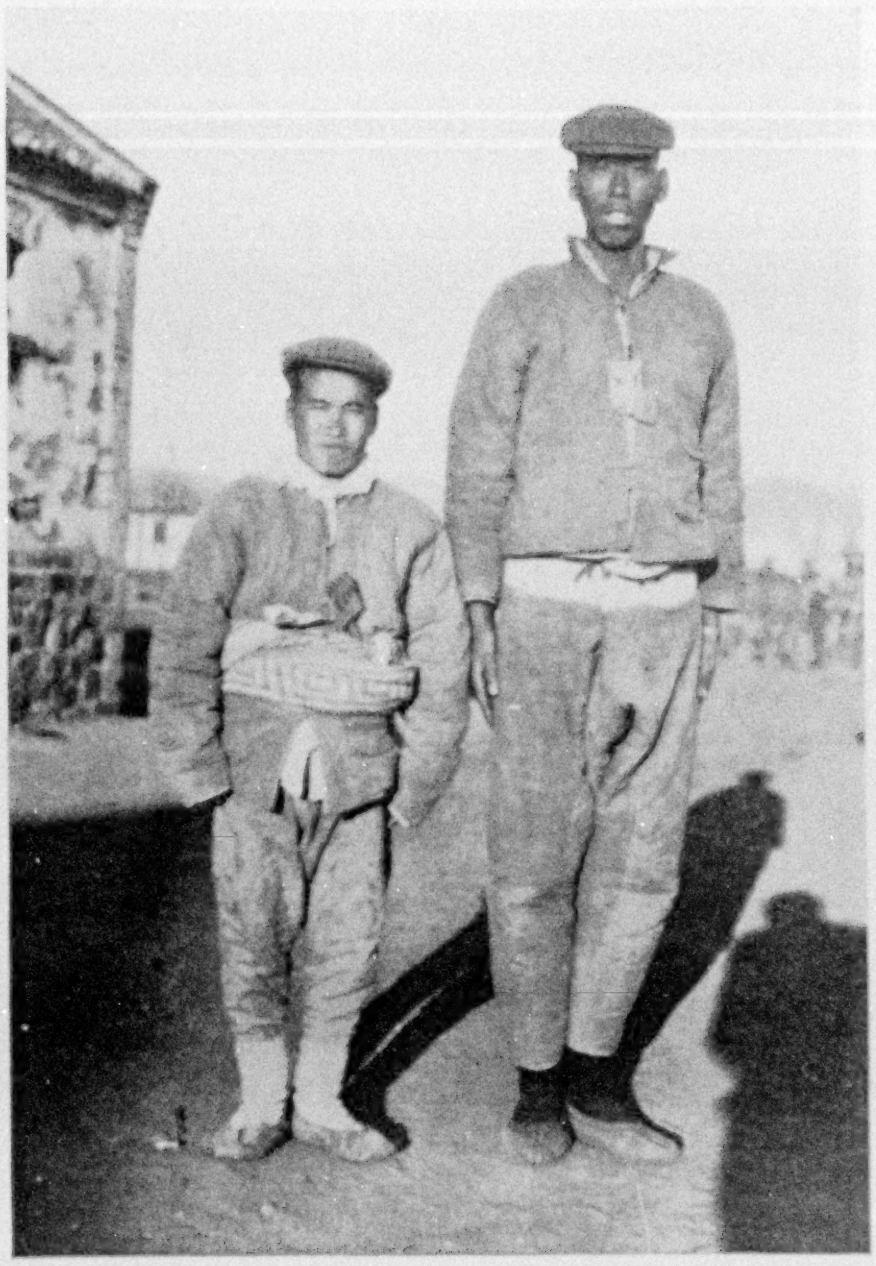

Photograph from Lieut. Richard M. Vanderburgh

EXTREMES LABOR SIDE BY SIDE IN SHANTUNG

"How big is a Chinaman?" is a frequent question. "How big is an American?" is a common answer. The Shantung coolie is usually tall and well built, trained down to fighting weight, slim-waisted and barrel-chested, although his awkward costume conceals the latter excellence.

Wall began to shut out the rest of the world and 400 years before the birth in a Bethlehem manger of Him who was to affect China in a degree second only to Shantung's great Sage. Christ—Confucius! They divide the thoughts of the Shantung population today.

The Grand Canal cuts across the very base of Shantung. But the pressure of population and the urge of the empty stomach have made the strapping big fellows of that province ever ready to migrate to any point where the clink of hard coin gives promise of a full dinner pail.

When 30,000,000 people whose idea of a day's work is 16 hours are crowded into a province the size of Iowa, there must either be industrial development in silk, lace, and hair or periodic migrations of labor to less thickly settled parts of the world.

In summer the Shantung coolie is north along the Amur mining gold or harvesting soy beans in Manchuria. I have seen him carrying Harbin flour aboard the Sungari steamers, and he laid hundreds of miles of ties on the Trans-Siberian. I have seen him juggling gaily-painted sticks at the Nijni Novgorod fair, and companies of Shantung coolies fought for the Bolsheviks beside the Kremlin and against them near Tchita. In ruined Van a Shantung coolie, heavily dressed against the bitter cold of the Armenian plateau, rolled into town ahead of twenty of his compatriots who brought flour to that starving city.

FRANCE-TRAINED COOLIE TO BUILD HOME RAILWAYS

Soon the Japanese will be laying the rails for their new railway concession from Kaomi, near Tsingtau, to Hsuchowfu, whence a Trans-Asiatic trunk line, which will be to the Trans-Siberian what the Union Pacific is to the Canadian Pacific, is some day to link Lanchow and Kashgar with Peking and Russian Turkestan. Another Japanese line will run from Tsinan to cut the Peking-Canton line at Shuntehfu.

In building these railways the Shantung coolie will have his rightful place, and skill gained in France will stand him in good stead in linking his home province to the capitals of Eurasia from Madrid to Tsinan.

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Photograph by Lieut. Richard M. Vanderburgh

SHANTUNG COOLIES FOR FRANCE

"Man-power!" shouted Europe; and Shantung answered with 150,000 coolies who knew no fatigue and who did intelligently and industriously the simple but essential tasks that they were given to do. Now there is talk of a quarter million more Shantung coolies to help restore France.

The rivers of China have built strange elements into the character of the sons of Han. In the gorges of the Yangtze there is the humble tracker, the human tug, who conquers rapids by the power of naked thigh. Through his heart-breaking toil at the woven bamboo cable, huge Szechuan junks are made to breast the flood and a million horse-power of Himalaya's snows are triumphed over again and again by puny man.

### THE TANTRUMS OF THE HWANG-HO

But the Yangtze below the gorges is a tame and steady stream. Its mood may vary, but it never runs amuck. The Hwang-ho, or Yellow River, on the other hand, is the champion bucking broncho river of the world. It hurdles its banks, spreads death and desolation in its track, and commandeers Red Cross workers with a suddenness of passion that cannot be foreseen.

While the Crusaders were fighting in Palestine, the Hwang-ho emptied into the Gulf of Pechili, near Tientsin. Then it swung its mouth southward 400 miles in a single week, and until 1852 emptied its yellow flood into the Yellow Sea. Then it had another tantrum—hurdled the whole promontory of Shantung and found its present outlet, facing Port Arthur.

Today it is the constant menace to millions of people who live in what may be its next river-bed. It is confined to its present course by huge dikes that tower above a million homes. The Shantung coolie has for centuries set the example for the little Dutch lad of the story-book, who stuck his finger in the fissure in the dike and thus saved his country.

The old Hwang-ho goes mad every few years and lashes a million innocents with his swishing tail, but the Shantung coolie, like a modern St. George, enters the lists against the foamy-mouthed dragon and once more confines it within earthen embankments. Yellow River and yellow man—and the man ultimately wins.

Then he goes back to growing three crops every two years in an impoverished soil that has been cultivated for centuries and forces Nature to support as many Shantung farmers to the square mile as

XUM

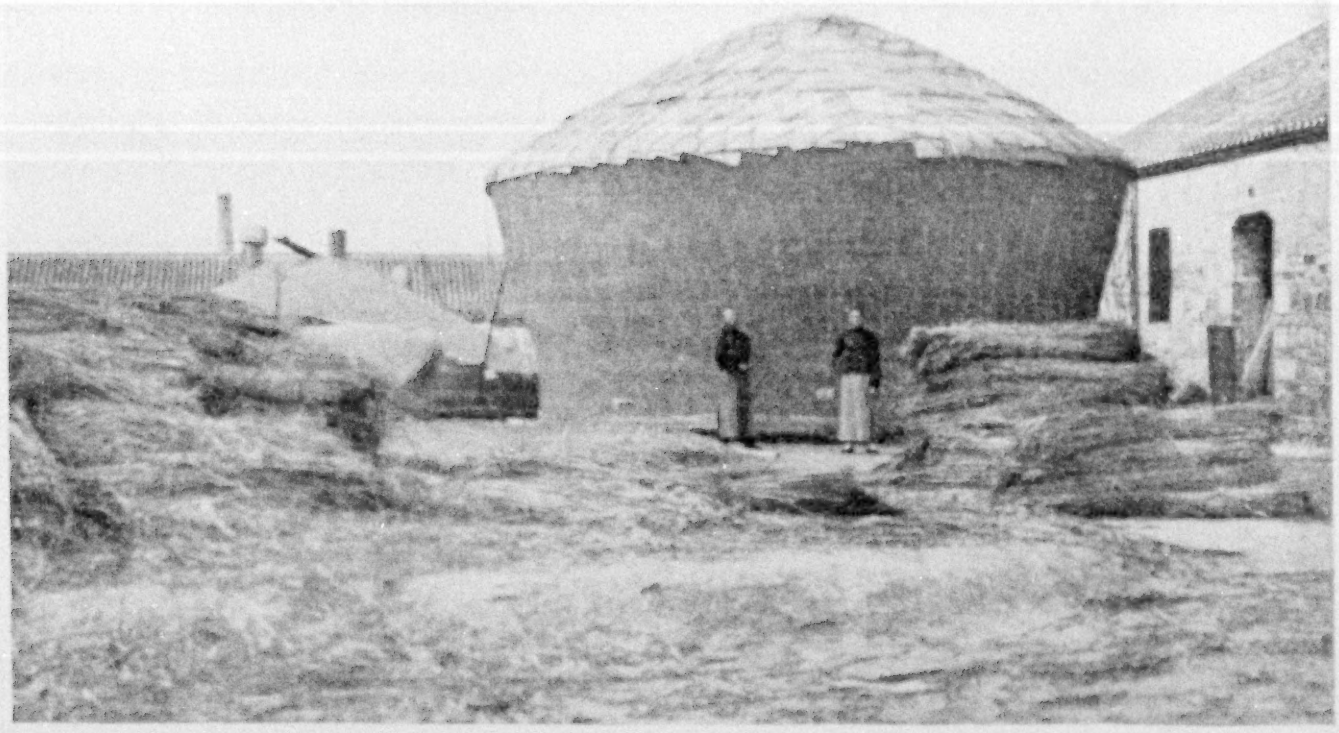
Photograph by Lieut. Richard M. Vanderburgh

SOLDIERS OF MENIAL SERVICE IN FRANCE

In ancient Phœnicia the mountains repelled and the fine harbors of the Syrian coast invited the men of Tyre and Sidon to become sailors and traders. In Shantung the ever-hungry stomach drives men to any corner of the globe where honest labor and hard coin can come to an understanding. Chinese coolies who have learned to sit down in companies of five hundred and be well fed are never going to be the same men who toiled sixteen hours a day for a mere pittance. Chinese man-power is waking up.

CHINA HAS ITS SIDEWALK RESTAURANTS, TOO, BUT NOT OF THE CAFÉ DE LA PAIX TYPE

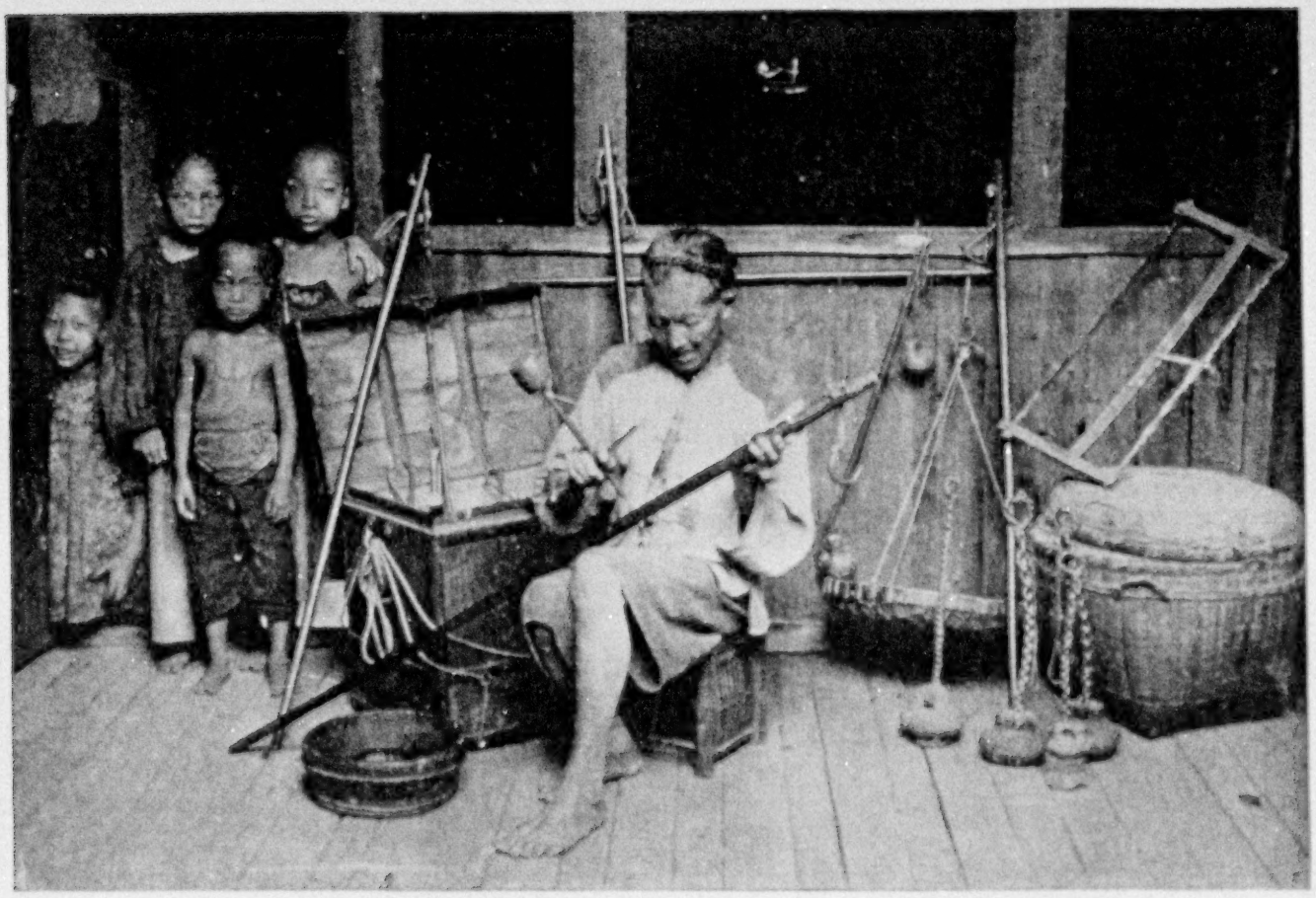
When an American woman buys a Chinese hair net, or an American man a summer suit whose pongee has been spun by Shantung silkworms, a family in the province known as China's Holy Land adds a strip of pork to the day's menu.



Photograph by C. D. Jameson

A BASKET MADE OF BANDS OF STRAW BRAID TO HOLD SOY BEANS

The bands, about eighteen inches in width, are wound round and round in a spiral from the bottom up, the bottom edge of the band being on the inside of the top edge of the band below, which overlaps it some four or six inches. This huge basket is filled with beans as it is built, thus holding the bands in place.



A CHINESE BUREAU OF STANDARDS

Although to the visitor the Chinese seem careless in their standards of measurement or weight, the shoe is usually on the other foot. Until recently, even the silver bullion which served as currency was weighed and the seller bargained around until he discovered the most friendly steelyards. The Chinese steelyard is not steel at all, but is made of some heavy wood, with the weights marked with small silver or steel points which are inlaid with great care.



XUM

Photograph by C. D. Jameson

A BOAT WITH WHICH THE CRAFTY CHINESE FISHERMAN MAKES THE FISH CATCH ITSELF

Attached to the long, narrow canoe is a thin board, painted white, one edge floating in the water. On calm, bright moonlight nights the canoe is swung out into the river across the line of an advancing school of fish. The man sits quietly waiting and the fish, dashing at the white board glistening in the moonlight, land in the canoe.

pre-war Belgium supported through highly developed industry. Does such a territory offer asylum to the Japanese? With such a man as the Shantung coolie, the Japanese farmer simply can't compete.

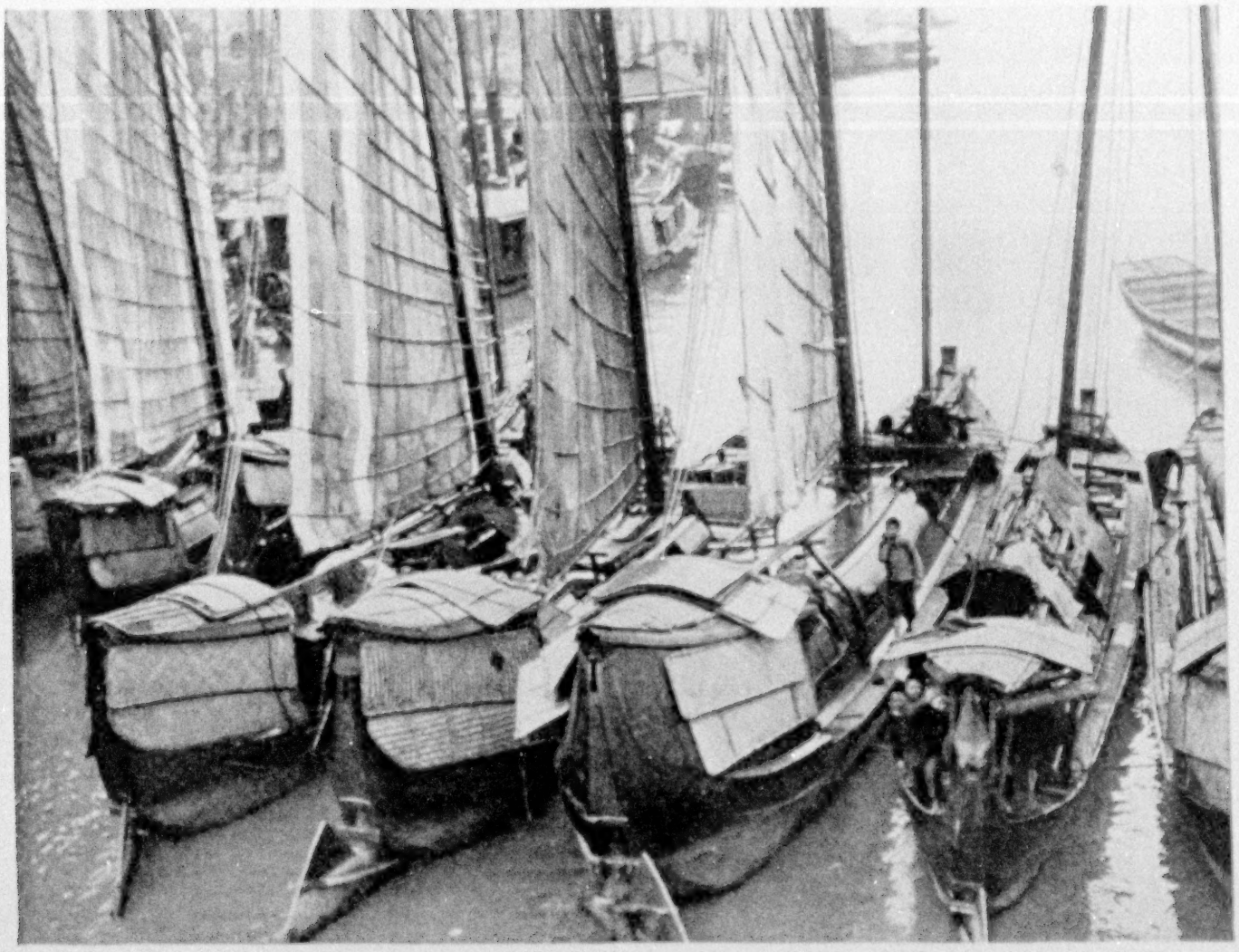
### TSINGTAU, CHINA'S ATLANTIC CITY

Shantung is a land of villages, but it has its big modern towns as well. Tsingtau and Tsinan are two of the most rapidly changing cities in the world. Germany laid their foundations. Japan is rushing them to completion.

Tsingtau is the Atlantic City of the China coast. Its climate is excellent, its golf courses are well constructed, and it boasts modern hotels, miles of the finest motor roads, and clean streets.

Behind it stretches a background of charming hills, where the scrap-iron and smashed cement of German forts spell the downfall of German military power and where millions of trees testify to German skill in battling against one of China's most serious problems.

Were China's countless hills clothed in such forests as form the lovely setting



Photograph by Maynard Owen Williams

ALL "SHIP-SHAPE" ON SOME CHINESE JUNKS

Thanks to the excellence of Chinese varnish, which resists hot and cold, fresh or salt water without discoloration, the Chinese houseboats or junks are models of cleanliness. From far Szechuan to the network of waterways around Shanghai, the Chinese houseboat is a floating credit to the by no means spotless towns.

for Tsingtau's fine homes, the Yellow River would purr instead of roar, and flood and famine would be banished forever from the land.

When the Japanese captured Kiaochow, they made, as one of the conditions of its return to China, the granting of a Japanese concession in the port of Tsingtau.

During the war the Japanese built a new city upon low land surrounding the magnificent inner harbor of Tsingtau. In it the custom-house, the railway station, several harbors, and numerous industrial plants are now located.

Germany developed a show-place at Tsingtau—a political and naval base in the Far East. Japan is fashioning there a beehive of industrial activity, having constructed scores of permanent buildings in the concession which she, from the first, demanded as her price of returning Shantung to China.

### JAPAN'S INTENSIVE EFFORTS IN DEVELOPING SHANTUNG

Tsinan has undergone similar transformation. A Chinese city with a German veneer has overnight become an outpost of Japan. The Japanese population in the overcrowded Province of Shantung has increased 6,000 per cent in five years.

New buildings and barracks, guarded by stocky young men wearing the uniform of Japan, have sprung up as if by magic. One of the most powerful wireless stations in the Far East has been installed. During the 21 years since our purchase of the Philippines, the United States has not expended there as much money as poor Japan invested in Shan-

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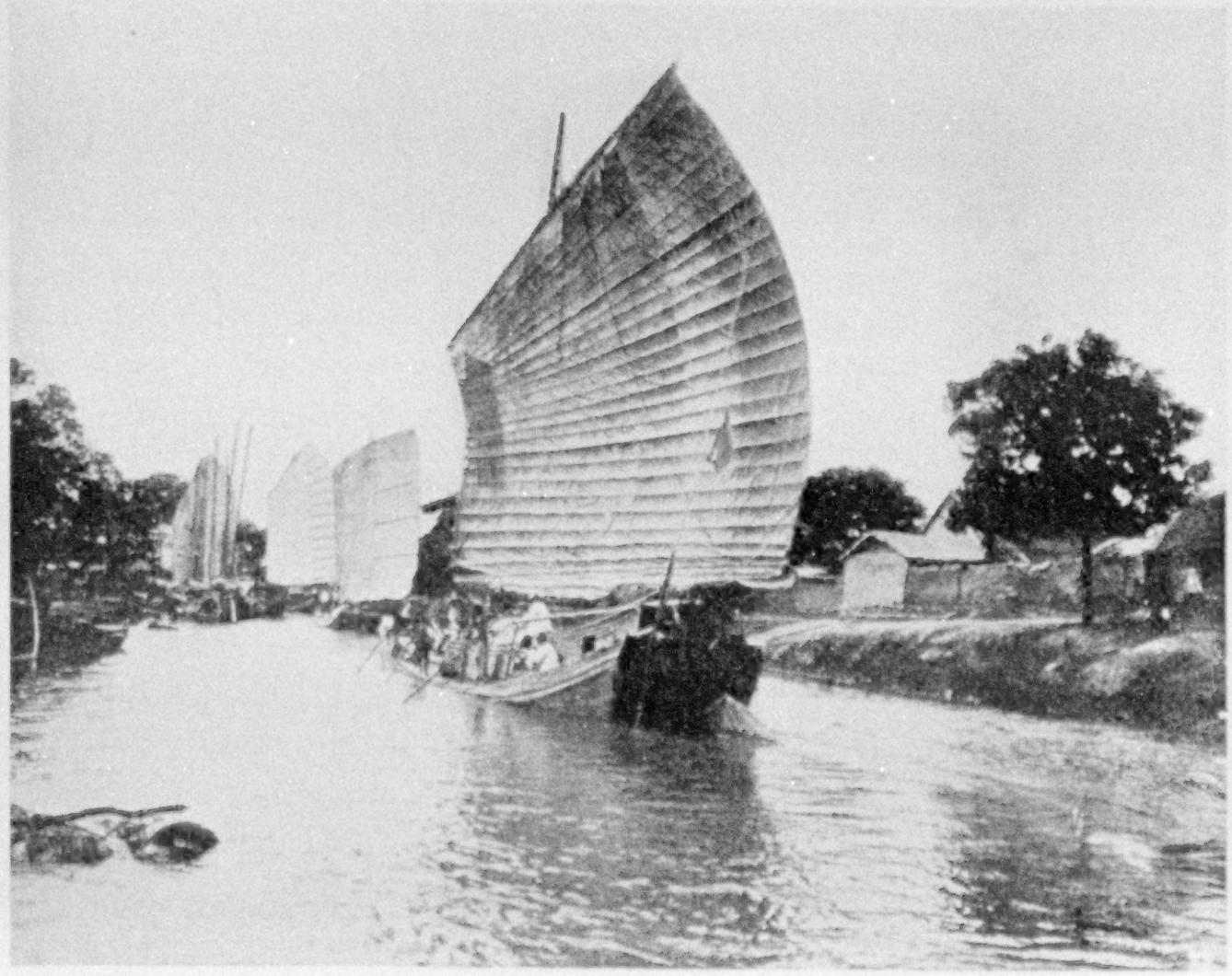
Photograph by C. D. Jameson

ONE OF THE SLUICES OF THE GRAND CANAL

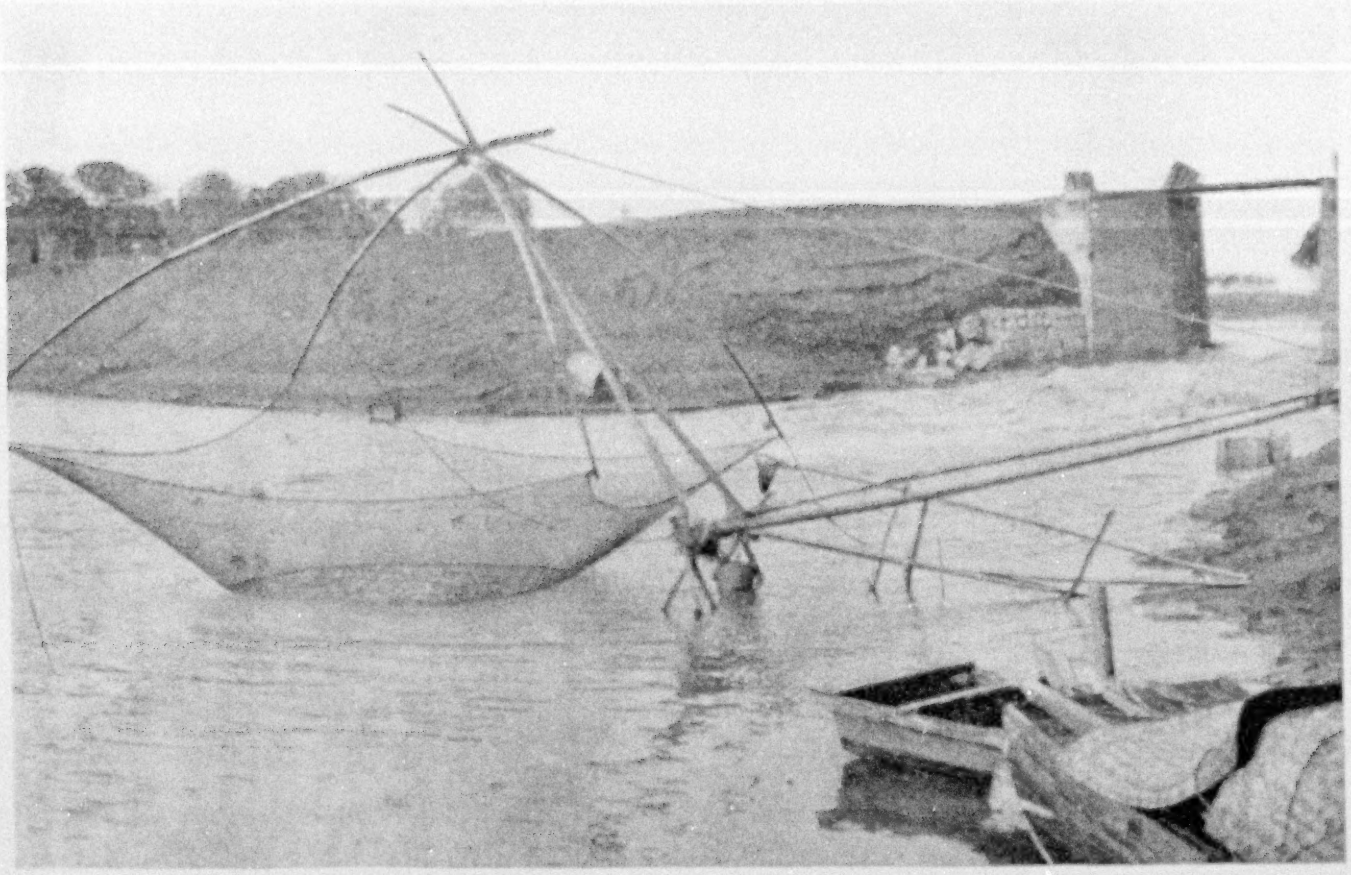
Notice the fisherman with his large net in the foreground.



Photograph by C. K. Edmunds

THE MAN ON THE TOW PATH AND AT THE OAR IS THE CHIEF DEPENDENCE OF THE CHINESE JUNK WHEN THE WIND BLOWS UNPROPITIOUSLY ON CHINESE RIVERS

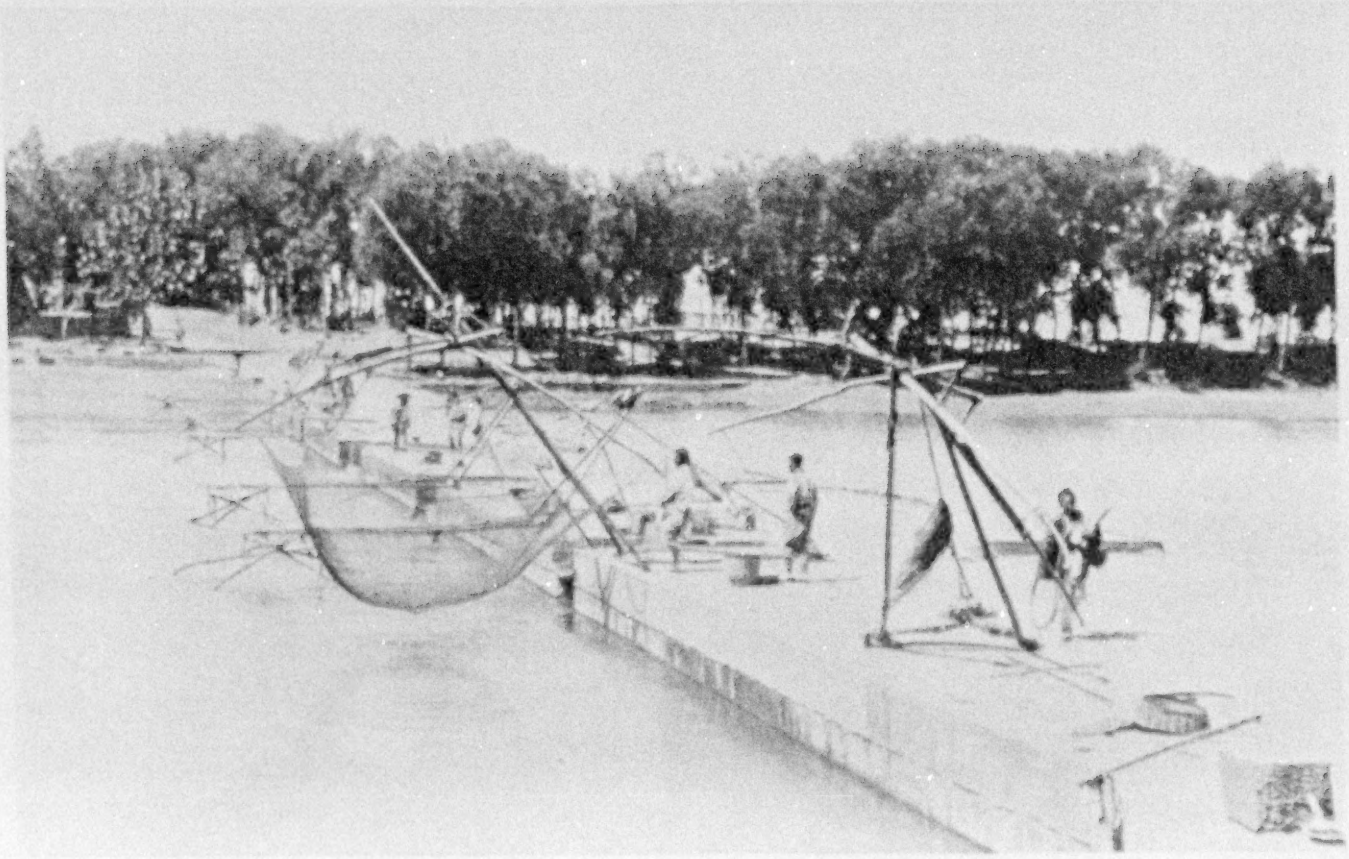
The Grand Canal, China's great artificial inland waterway, was begun in the sixth century before the Christian era, but was not completed until the end of the thirteenth century.



Photograph by C. D. Jameson

A FORM OF FISH NET IN USE THROUGHOUT CHINA

The frame works on a hinge at the crossed uprights in the water. The long arm running to the right is raised and the net sinks below the surface to a suitable depth. When the fisherman who works the long arm feels that he has reason to think that some foolish fishes are over the net, he pulls down the arm, raises the net, and with a small scoop net lands any fish caught. About nine times out of ten there are no fish caught.



Photograph by C. K. Edmunds

FISHING IN THE WEN-HO

The highway from Yenchow to Küfu crosses the river by means of this broad stone causeway, in which several arched openings permit the passage of the stream and afford the Chinese disciples of Walton facilities to enjoy the sport to their hearts' and stomachs' content.

Photograph from H. T. Kelsh

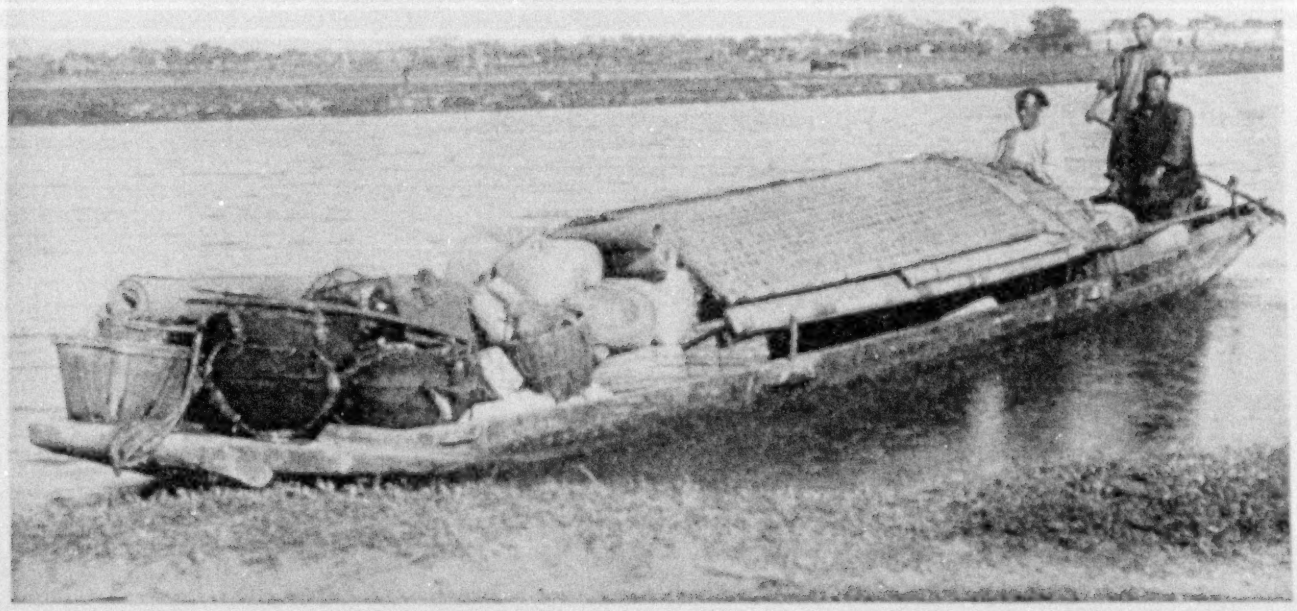
CHINESE REFRIGERATOR CARS

The transportation service is not especially rapid, but in many parts of China live pigs are shipped in this manner. A boatload of fat porkers encased in wicker baskets floating down one of China's traffic-teeming rivers is a familiar sight and an ear-splitting sound.

XUM

CHINESE MANDARINS UNDER THE OLD REGIME

Contrast with these silk-clad officials of a few years ago the sturdy coolies who were China's contribution to the war and who are to be the bone in sinew of the new republic.



A LITTLE BIT OF EVERYTHING ON A CHINESE FREIGHT AND PASSENGER BOAT

China is rich in the number of her roads, but excessively poor in their quality. For centuries, therefore, chief reliance for internal communications has been upon her numerous canals and navigable rivers. Her railway history dates from 1876, and at present there are 6,000 miles of railways open to traffic, including 1,800 miles in Manchuria.

THE COMMONS AT A CHINESE GIRLS' SCHOOL

Rice is the staff of life for millions of Chinese, but there are other millions who have never tasted it. Much of China's rice is exported and millions of pounds of cheaper grades are imported from Indo-China. The Chinese, no matter how poor, like their rice thoroughly polished and not only free from any hull, but also from the layer of glutinous material which has high food value, the absence of which is supposed to cause beri-beri.

tung before the war was over and the Shantung decision made. New extensions to Tsinan are being rushed to completion, and the old walled city, like the intramural city of Jerusalem, is becoming quite dwarfed by the modern settlement that has sprung up all around it.

### BANDITS TERRORIZE CHINA'S HOLY LAND

During the past three years Shantung has suffered seriously from banditry and the buying up of copper *cash*, which forms the currency of the poor.

Various forms of money have been used in Shantung for 3,000 years. At first these coins took the form of a knife, and reproductions of this early money are now used as paper knives in many foreign homes in China.

Other shapes resembled axes and spades, but in the Chou dynasty, about 600 B. C., round coins were introduced. These round *cash*, with a square hole or several round ones in the face of them, proved much more convenient than the older and more bulky coins in the shape of knives and axes.

But the old coins for some time remained the standard and the new coins bore inscriptions showing that their value was one "knife-coin" or one "axe-coin," as the case might be.

When war sent the price of brass and copper soaring, thousands of tons of these copper and brass coins were melted down, thus robbing the country of its medium of exchange, and the exportation of *cash* was forbidden.

In China, however, the foreigner takes large liberties, and smelters soon sprang up in Tsinan and Tsingtau, to which long lines of creaking wheelbarrows, heavily laden with coins, were pushed by sweating coolies.

### THE LUSCIOUS FRUITS OF SHANTUNG'S MARKET BASKET

To the visiting foreigner Shantung offers excellent fruit and vegetables, many of which have been introduced by Christian missionaries. The average Chinese pear is better suited for ammunition than for food and tastes like a cure for a canker sore, but a Shantung pear of the improved variety oozes lusciousness as readily and irresponsibly as does an American Bartlett.

The peanuts and persimmons of Shantung are famous, and Chefoo cabbages are sold throughout the Far East. The Chinese "date," which is truly a species of jujube, is produced in large quantities in Shantung and can be had in almost any chop-suey palace in America, although whole mule loads of this dried fruit are carried westward to the Chinese epicures of Shensi and Shansi.

### SHANTUNG A VAST RESERVOIR OF LABOR

The Shantung farmer or coolie is a stalwart, slow-thinking, but by no means stupid fellow, slow to anger and slow to forgive. His life is that of patient toil with Nature, who has often proved a fickle mistress.

He lacks the ready wit of the trader and the militant qualities of the soldier; but he is the finest human machine in the world. He is adaptable and he attains great skill in doing a simple task well.

As a vast reservoir of potentially high-grade labor and as a way-station on what promises to become a new world highway, Shantung toils on unconscious of her fate and power, waiting for the day to dawn when her many millions will find sufficient food for their stomachs and the peace which above all else the industrious Chinaman covets.

The Shantung coolie on the western front has made good. Another quarter million are expected to be recruited in that province for reconstruction work in France, and American-trained Chinese are planning to teach these laborers several modern courses, including phonetic spelling that may be learned in one month.

War and politics have forced the Shantung coolie into the limelight. He smiles, toils, and watches the life around him. No problem has balked him yet. With his salvage and reconstruction tasks in France completed, he may be expected to return to his home, take one look at the Yellow River, which he has so often tamed, and then start in to clean up China and bind it by bands of steel and crowded waterways into a worthy republic.

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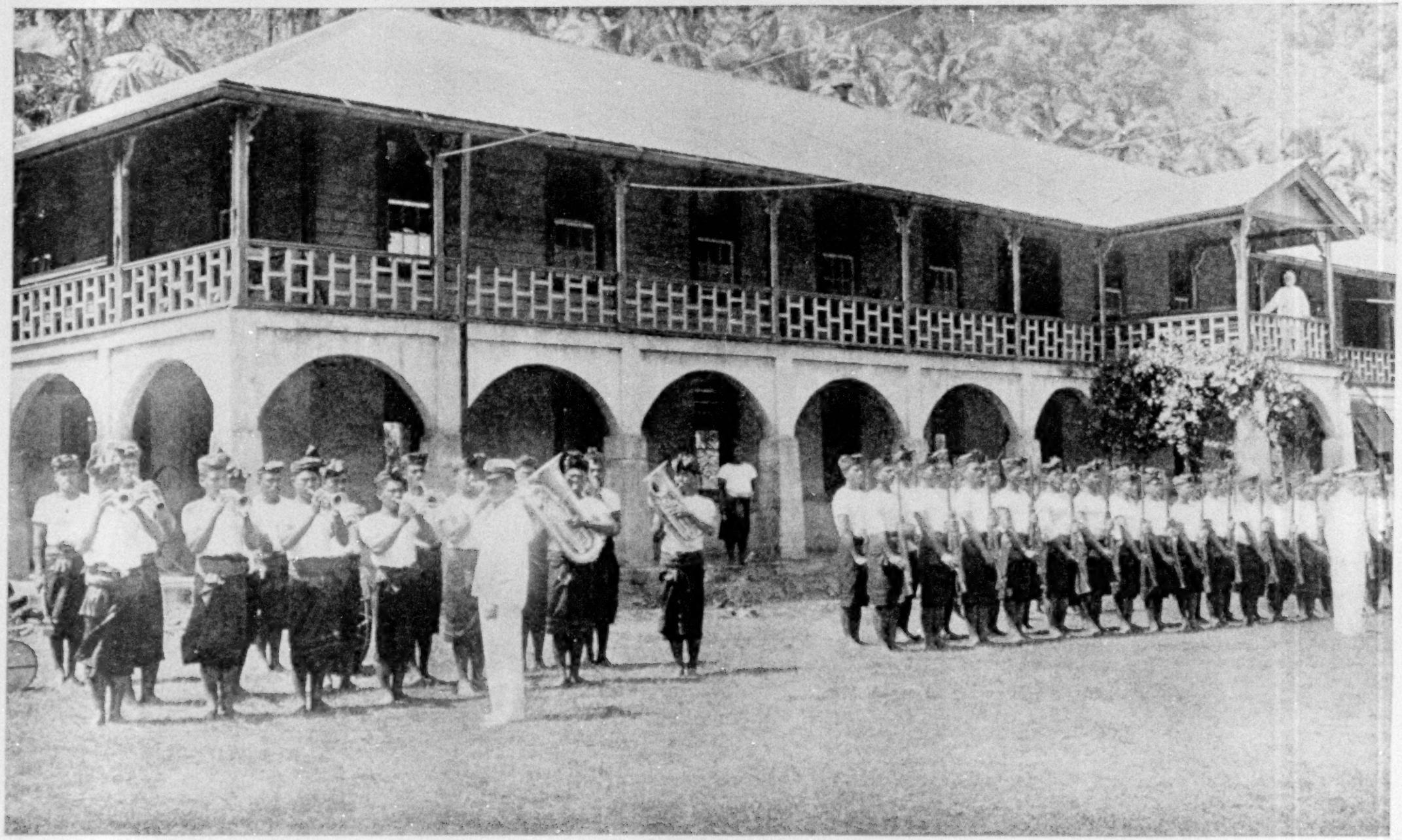

THE FITA-FITAS ON PARADE IN FULL-DRESS UNIFORM OF WHITE UNDERSHIRT AND KILTIES

This is the Samoan variation of khaki and brass buttons which sets the heart of the vivacious native belle in a flutter. "Oh, listen to the band" is the most popular pastime among the natives of our South Sea Island possessions. By the patient effort of an American naval instructor, this military brass band has been taught to play, and the organization now makes itself heard on all occasions. Every steamer from the States brings a consignment of popular music, which is awaited with an eagerness comparable only to the interest which people of other climes evince in Paris modes.

# AMERICA'S SOUTH SEA SOLDIERS

By Lorena MacIntyre Quinn

WHEN thinking of the insular possessions of the United States, we are apt to lose sight of the fact that our flag flies over a group of six tiny islands in the South Seas, comprising what is known as American Samoa. Here our government maintains a naval station, on the Island of Tutuila, at Pago Pago, one of the finest and safest harbors in the South Seas.

In these troubled times it is well to remember the strategic value of the naval station at Pago Pago, "with its magnificent harbor and its situation at the crossroads of the Pacific trade routes from North America to Australia and from Panama and South America to the Orient."

The harbor occupies the crater of an extinct volcano and is one and one-half miles in length and three-fourths of a mile wide. The entrance to the harbor from the sea is a very narrow channel. The steep mountains, covered to the highest peaks with coconut palms and greens, seem to embrace the villages on the shores and protect them from severe tropical storms.

It was over these islands that our first difficulties with Germany occurred, in 1888. Overzealous local officials made the rivalry more intense, and each home government sent ships of war to the scene. The situation was growing critical, when a storm destroyed the two fleets. After this the points at issue were adjusted and an agreement was signed in Berlin that provided a hybrid form of government for the islands.

### AMERICA'S SOLDIERS WHO WEAR KILTS

Under this arrangement the Samoan group continued to make trouble until, in 1899, they were divided by a new treaty, which gave each side what it wanted—Germany, a colony; the United States, a coaling station.

Early in the World War, German Samoa was captured by the New Zealand troops, and thereby England acquired a rich colony.

American Samoa is under the supervision of the Navy Department of the United States. The naval officers stationed at Pago Pago form the governing body of Tutuila and the five other small islands. The yeomen among the bluejackets are valuable office assistants.

The Fita-Fitas,* as the native soldiers are called, constitute an important unit in the government of American Samoa.

It would be hard to find a more picturesque body of men than these, our South Sea Island soldiers. Tall, broad-shouldered, handsome in features, possessing splendid poise, they are admirable types of their race.

Their fatigue uniform consists of a sort of black kilt with a bright red stripe around the border. Above the waist and below the knees the uniform is "Nature's own."

A leather belt carrying a dagger on the side holds the kilt or *lava-lava* in place. A bright red turban is the head-dress.

For dress uniform the Fita-Fitas wear with the *lava-lava* a sleeveless white undervest, similar to the X.Y.Z. or A.B.C. garments graphically described in the advertising sections of magazines.

### TOO MUCH UNIFORM, SOLDIERS TOOK COLD

When the native soldiers were first taken into the service of the United States, a less abbreviated and more conventional uniform was provided them, with the result that they were constantly suffering from colds; so there was a wise reversion to a uniform on the lines of their native dress.

The Fita-Fitas have municipal as well as military duties. They act as policemen in and about Pago Pago, guard all prisoners in the Pago Pago jail, and frequently are called upon to settle fights at

*Pronounced Feeta-Feeta.



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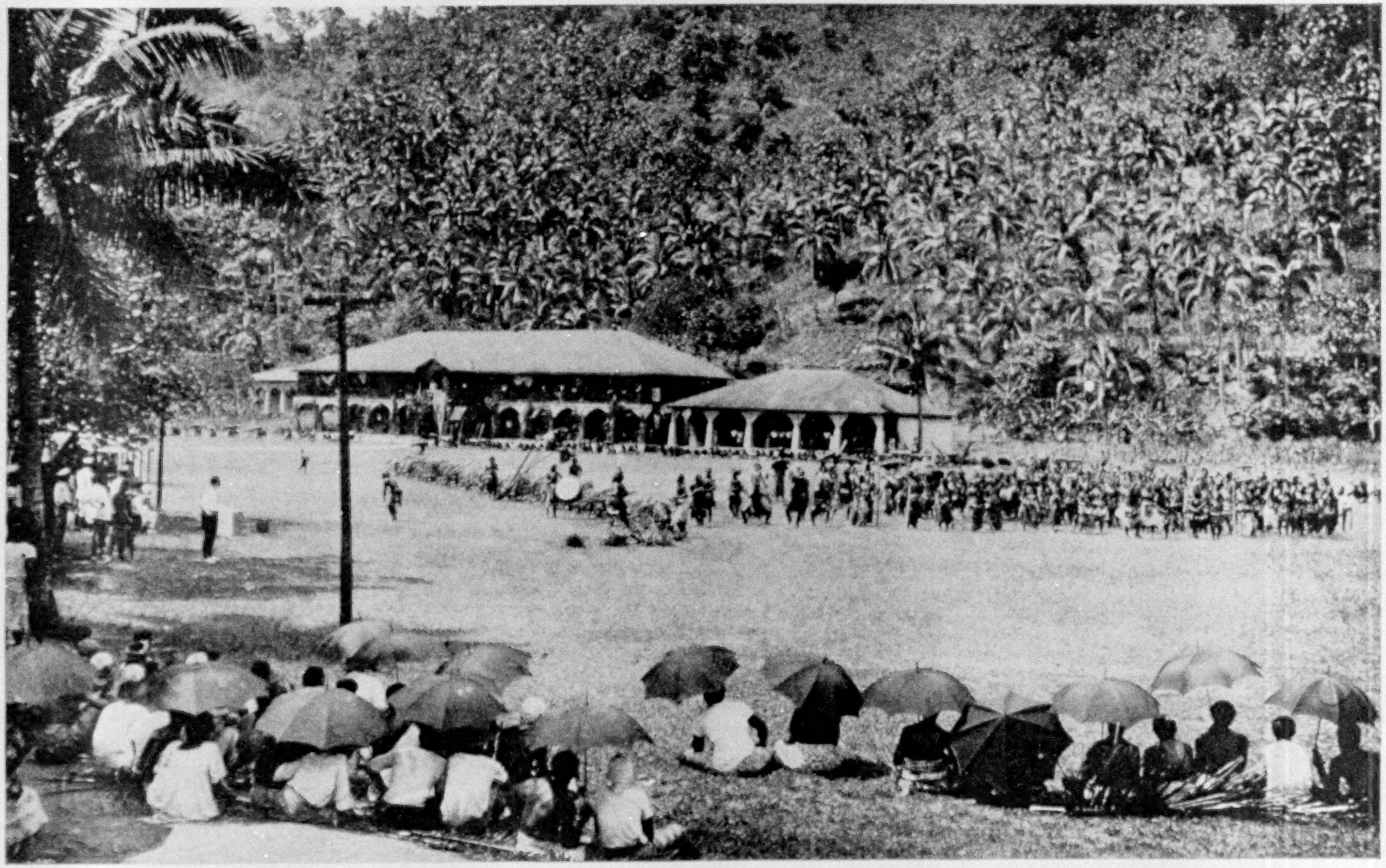

A LAWN FETE IN SAMOA—EXCEPT THAT AMERICA'S SOUTH SEA ISLAND WARDS DON'T CALL IT THAT

Tutuila, the principal island of the American group, has an area about equal to that of the District of Columbia and a population of six thousand. While the pleasure-loving Samoans are unrestricted by the government in the pursuit of their native pastimes, the game of cricket has become "the rage." Instead of the regulation eleven players to a side, the Samoans frequently employ forty or fifty, thus giving every one a chance to participate.

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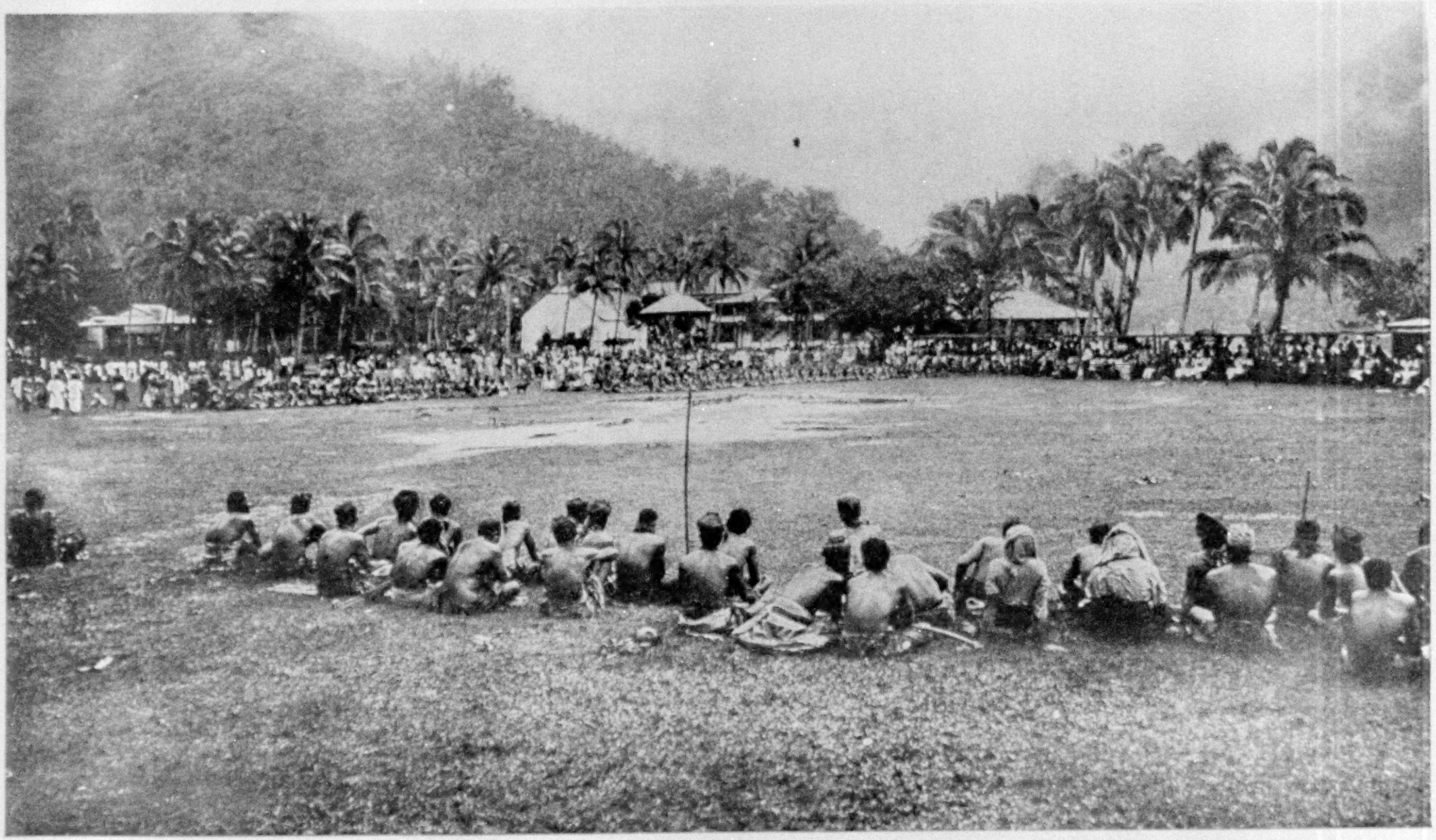
THE WHEREWITHAL FOR A SAMOAN FEAST

The natives have had to seek abroad for the meat to satisfy their modern appetites, as the islands have an extremely limited fauna—a few birds, a few snakes, and a rat. All other animals had to be imported. The chief products of the islands are coconuts, yams, breadfruit, oranges, pineapples, and bananas.



ASSEMBLED TO WITNESS THE GREAT SAMOAN GAME, CRICKET, INTRODUCED BY MISSIONARIES MANY YEARS AGO

In the foreground we see the occupants of the "bleachers," or is it the players' bench? Recently a college man taught these natives the joys of the "Serpentine" with which to celebrate a victory after the fashion of American football players.

XUM

THE SAMOAN VILLAGES CLUSTER CLOSE TO THE SHORELINE

Pago Pago, or Pango Pango, as it is also called, is the only good harbor in American Samoa. It occupies the crater of an extinct volcano. There are no public lands in the American group, the natives owning their own small farms and plantations, where they cultivate tropical fruits.

THE SAMOAN PAQUIN ACHIEVED A NOTABLE TRIUMPH WHEN HE ADDED A FRINGE TO THE NATIVE COSTUME: NOTE THE TWO CONSCIOUS BEAUTIES AT THE RIGHT

cricket games between rival native villages. The last-named duty is sometimes a severe test for the soldier as an arbitrator, especially when his own village is involved in the controversy.

The multifold activities of our South Sea soldiers seem rather at variance with the conceptions most of us have about native life in the islands of the South Pacific. We picture a native as lolling under a coconut tree, an obliging wife sitting close by, waving a palm leaf to "shoo" away the flies from her lord, and food on the branches of near-by trees within easy reach of both.

When the Governor of American Samoa makes a tour of inspection of Tutuila, he is always accompanied by native soldiers. The Fita-Fita selected to be the orderly on such occasions holds a proud position among his friends.

The official party is received with great dignity and formality by the chiefs of the villages on these tours, as the Samoans delight in ceremony and speechmaking. The reception accorded the Fita-Fitas by the pretty, vivacious Samoan belles of the different villages is always exceedingly cordial. These maidens, with bronze complexions, are as susceptible to the fascinations of the *lava-lava* uniform as their sisters in America are partial to khaki and brass buttons.

In some of their leisure hours the Fita-Fitas work in pineapple plantations and vegetable gardens, which they cultivate on the community plan. With customary Samoan generosity, they take great pleasure in presenting the *papalangi* (white people) with the fruits of their toil. Often a Fita-Fita will deposit a bunch of bananas or a sack of delicious avocados on the veranda of one of his white friends.

### MUSIC HAS CHARMS FOR THE SAMOAN SOLDIER

The principal feature of the Fita-Fita organization is the band. A little more than a decade ago the natives of Ameri-

can Samoa had never seen a brass instrument, but with infinite patience a bandmaster of the United States Navy eventually taught some of the Fita-Fitas how to play, with the result that today the repertoire of the Fita-Fita band covers a wide range of classical and popular airs.

Each steamer from "the States" brings a new supply of popular music, and when a ship en route to Australia stops over in the harbor of Pago Pago, the native military band goes on board and plays while the passengers dance. As the steamer goes out of the harbor, the musicians invariably assemble on the dock and play some farewell airs.

The music dispensed for home consumption is an absolute necessity for dances at the naval station, where sturdy bluejackets and lovely half-caste girls sway to the strains of the latest airs of Broadway.

A WOOD NYMPH OF SAMOA

The natives of these islands are pure Polynesians, light brown in color, of splendid physique, lithe and graceful. They are a simple, generous, hospitable people. Their language, musical and liquid, has been called "the Italian of the Pacific."

### THE BAND AS A PATRIOTIC INSPIRATION

When the Fita-Fita band plays the national anthem at "colors," it is a most impressive sight to see every Samoan man, woman, and child within sound of the music stand in silence and with simple dignity until the last note has been sounded.

The favorite form of recreation for the Fita-Fitas is cricket. The English missionaries taught the Samoans the game, and cricket tournaments are gala events in the islands. Instead of having the regulation eleven on each side, however, the natives have as many as forty or fifty, so that a game very often assumes the proportions of a miniature battle.

The "rooting" section is the prime attraction at the tournament. The antics and capers of the Samoan "bleacherites" at their games would make the "stunts" of the undergraduates at an intercollegiate game seem tame in comparison. The natives crouch on the side lines, beating wooden drums and giving vent to wild chants, easily eclipsing our own college

"IN THE SHADE OF THE SHELTERING PALMS," EVERY SAMOAN VILLAGE HAS AN IDEAL SETTING

But the palm is not a mere thing of beauty; it is a joy to the native taxpayer, who meets his obligation to the islands' government by the payment of dried coconut meat. Here one estimates his debts in pounds and tons rather than in dollars, for copra is a medium of exchange. The natives pay into the treasury for their share of the government expenses between 500,000 and 550,000 pounds of copra annually.

cheers, as far as volume of noise is concerned.

### INTRODUCING THE SERPENTINE DANCE AMONG SAMOAN ATHLETES

A college man visiting the Island of Tutuila impressed some of the native leaders with the idea that the cricket tournaments should end in a serpentine as it is practiced after the big football games in America. As a result the serpentine is now the grand finale of all the cricket games, and it is an amusing sight to see the vanquished team look on with stolid countenances while the victorious players give full vent to their barbaric instincts, racing about the grounds, leaping into the air, and shouting triumphant war cries.

Courage of a high degree is characteristic of the Samoans. The world looked on with admiration in 1889 when the natives defied the warships of three nations—three American ships, one British, and three German. Then, when a hurricane swept the harbor of Apia on March 16, 1889, and destroyed all the assembled warships with the exception of the British *Calliope*, these "savages" swam out and rescued their enemies.

The allied nations called on their subjects in the South Sea isles to join the mother countries in the vast struggle in Europe. Britain had her Fiji Islanders and Maori natives fighting for her; loyal Tahitian subjects fought for France. If the war had continued, we might have seen our Samoan friends "doing their bit" for their foster-mother country.

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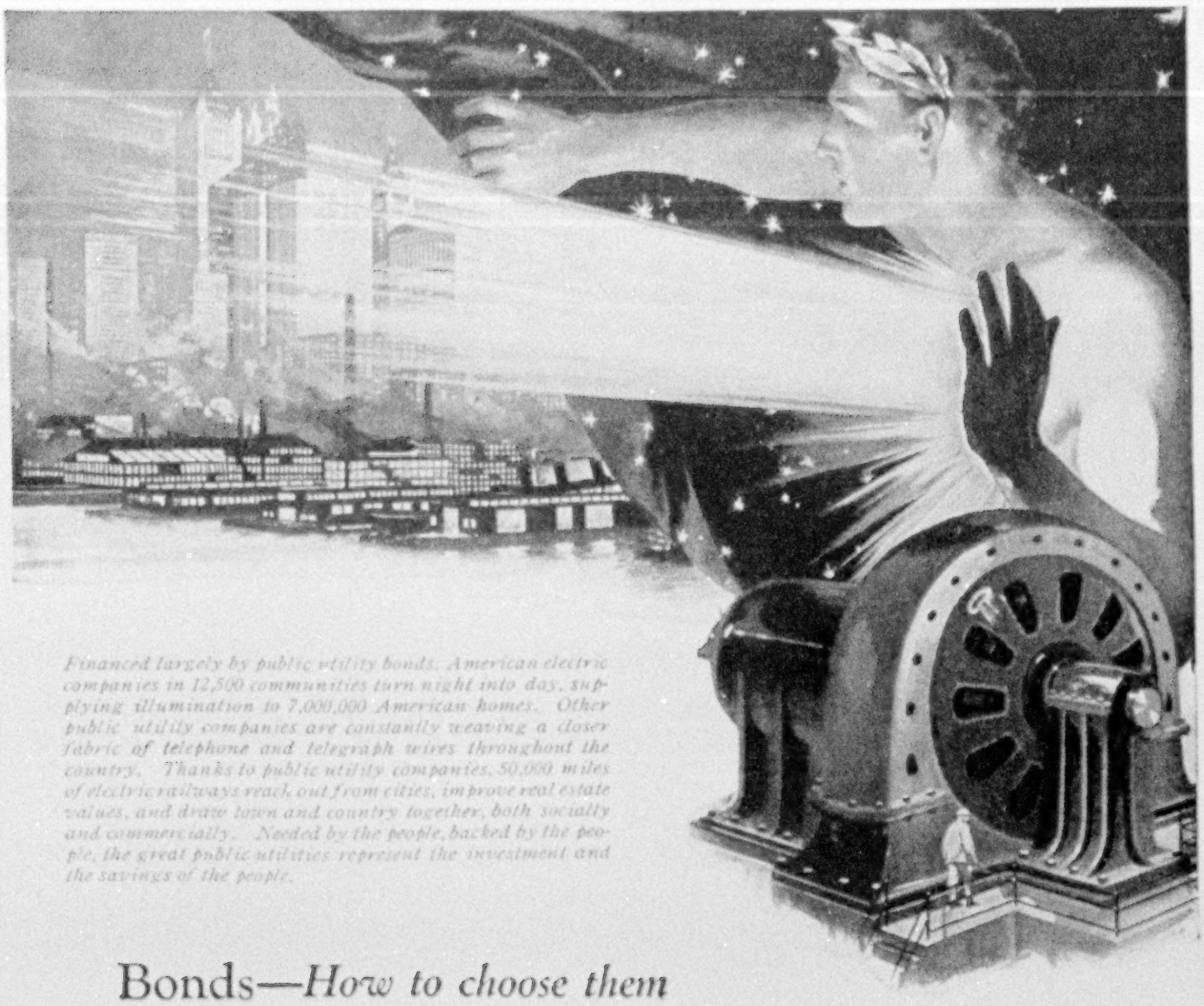

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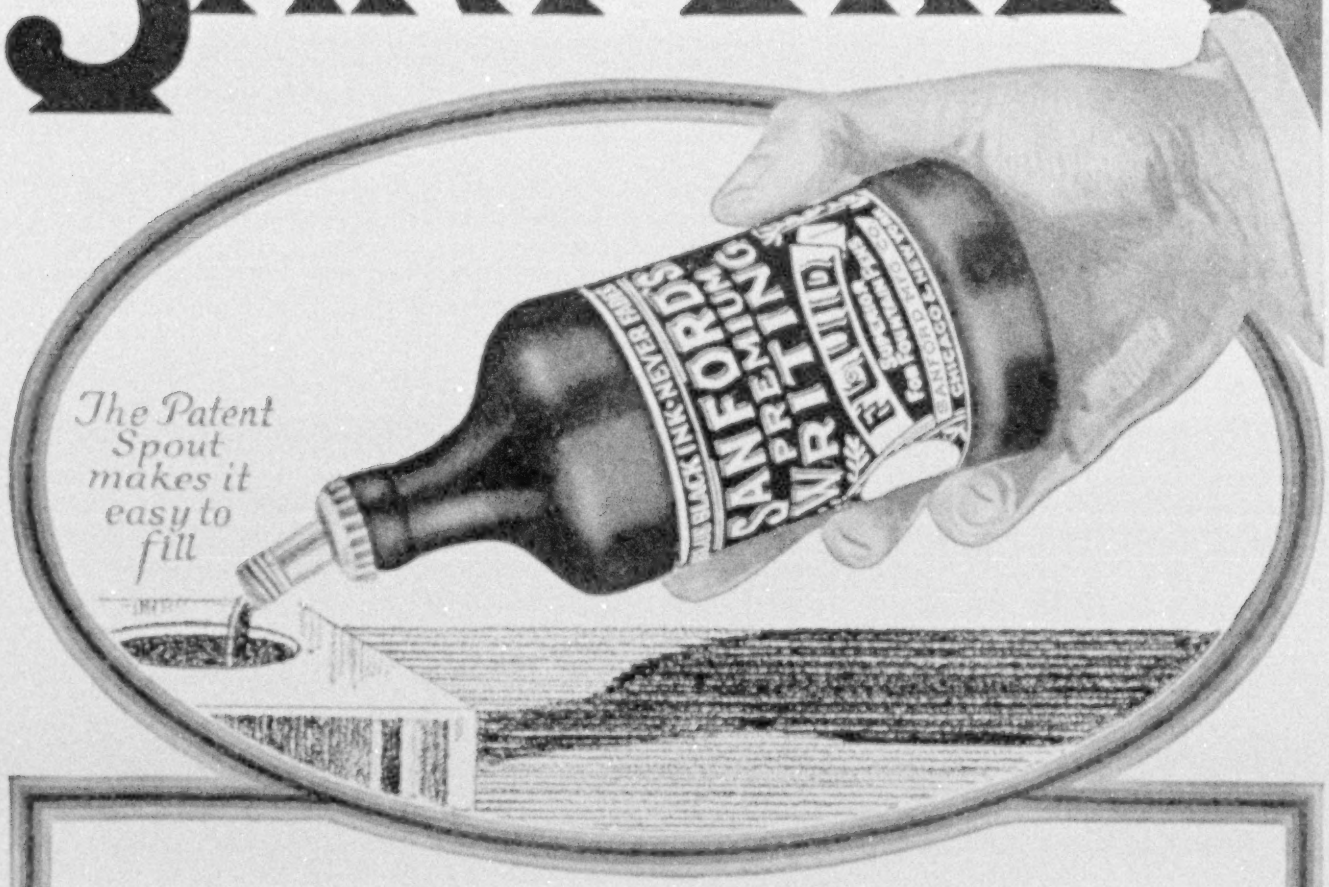


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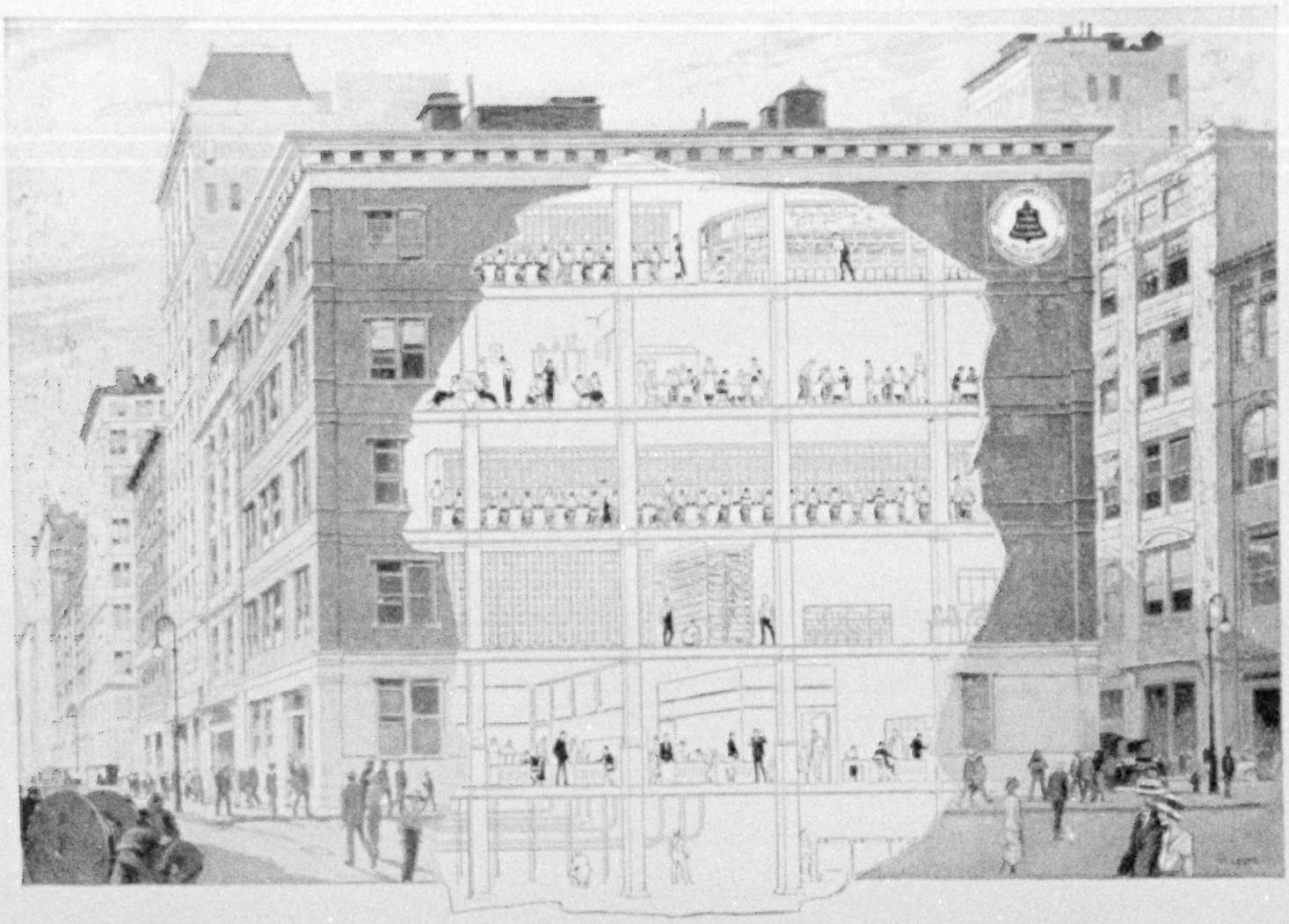

# The Great Task of Construction

With the coming of peace the Bell System faced an enormous construction program. Conditions arising from war resulted in the wiping out of reserve equipment normally maintained, and necessary to give prompt connection to new subscribers. The release of industry and accumulated growth of population now makes telephone demands almost overwhelming.

Telephone construction, including buildings, switchboards, conduits, cables and toll lines, must, from its inherent nature, be undertaken in large units. A metropolitan switchboard, with its tens of thousands of parts, may require from two to three years to construct and install.

Only great extension can meet the present excess burden of traffic and provide for future requirements. Extension which cares for immediate demand, only, is uneconomical and calls for continuous work of such a character as to be frequently detrimental to the service.

During the war the Bell System devoted all its margin to the needs of the Government. The great task of getting back to normal pre-war excellence of operation requires the reestablishment of an economic operating margin capable of taking care of a larger growth than has ever before confronted the Bell System.

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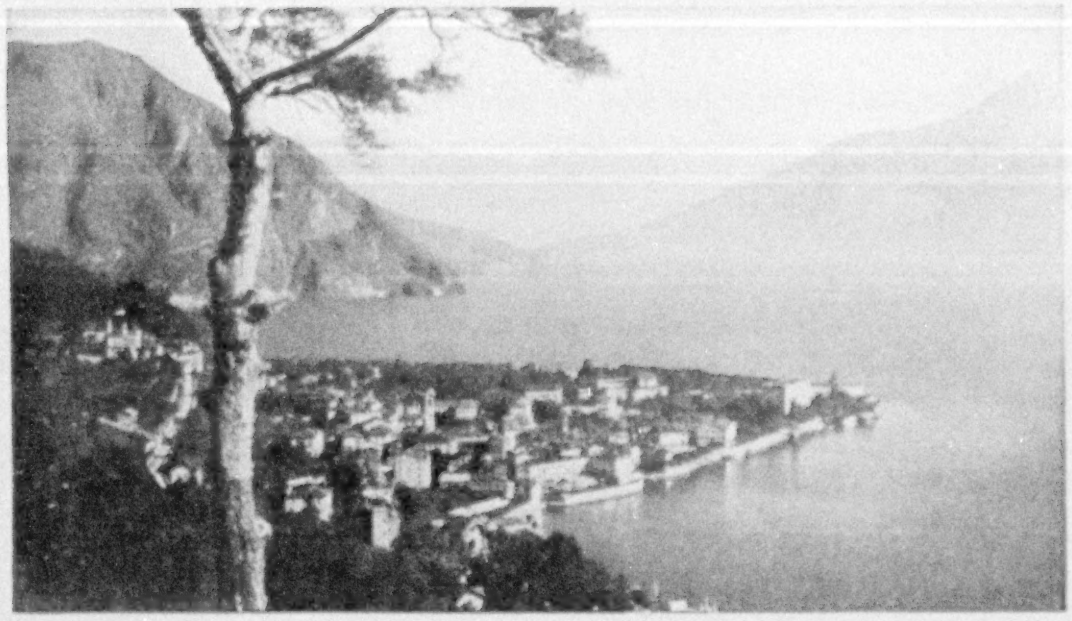

## A Cape in a Lake: Lake Como (kō'mō), Italy

The cape is the point of land. Why would you like to live in this town? How much farther could you see than if you did not live on a cape? Winds from over the water are cooling on hot days. Why would you like to live on a cape in the hot summer time? Storm winds are strongest over water because no high points of land check them. Where would you rather live in stormy times? And where will the cold winter winds be strongest? In summer the storm winds blow down this lake. They make the waves rise high. The boats try to reach quiet water. The cape shuts off the wind and makes a quiet place beside it. Two capes often make a bay. If they have high rocks or hills on them the bay is sheltered. Then it is a safe place for ships to come to land.

This cape is too small to be shown on the map. Study the map of North America and name all the capes. Tell where each is.


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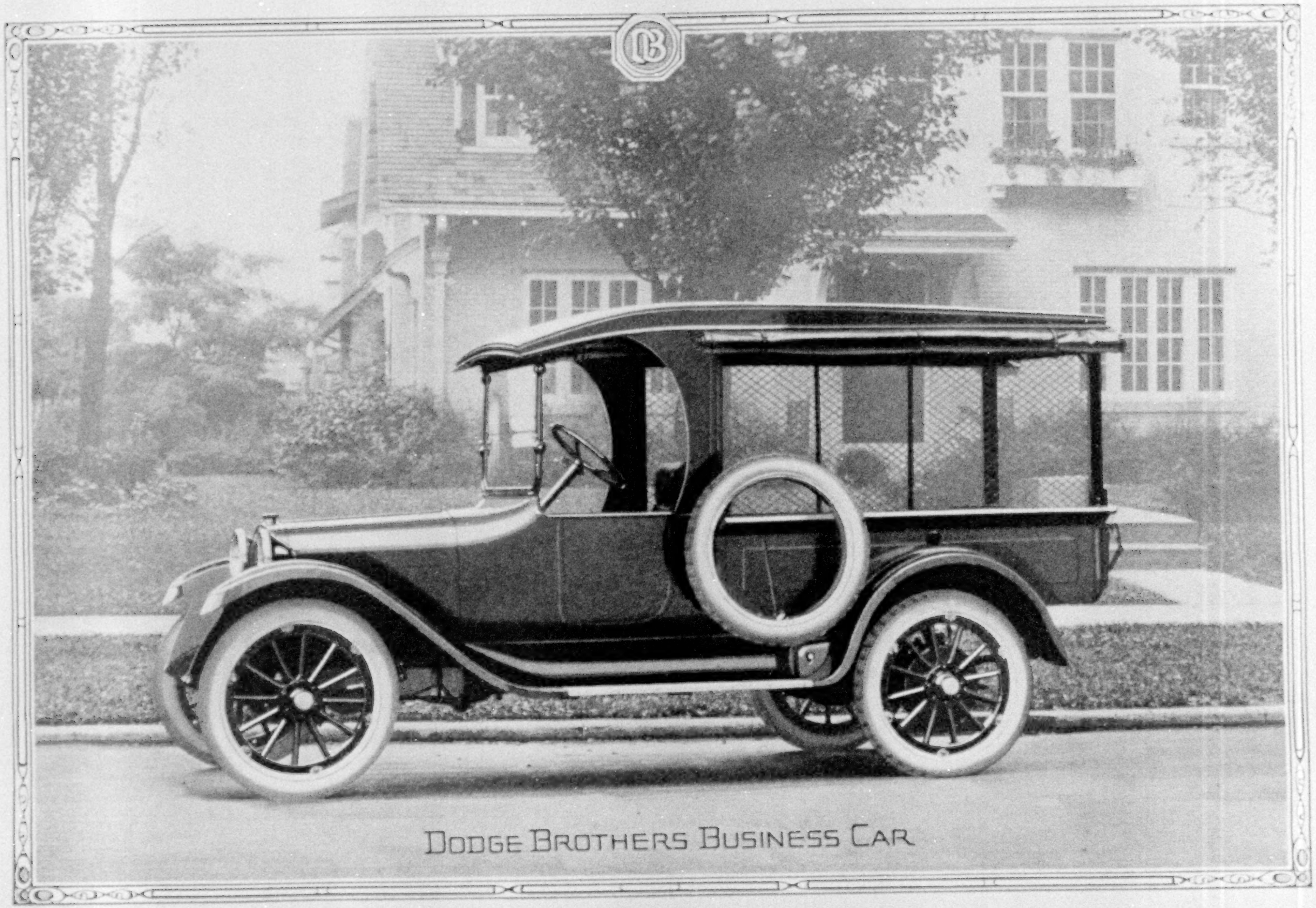
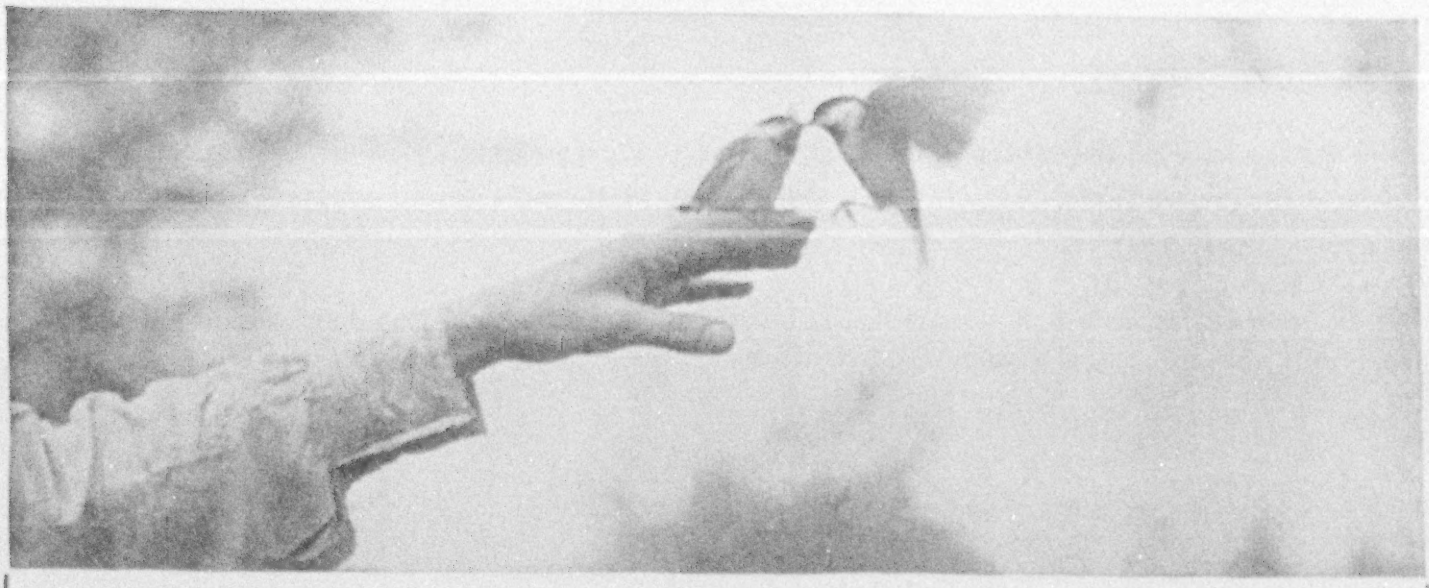


DODGE BROTHERS BUSINESS CAR



Photograph by Ernest Harold Baynes

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This is a photograph of a wild chickadee feeding her young in June. She does not fear in summer the hand that feeds her in winter


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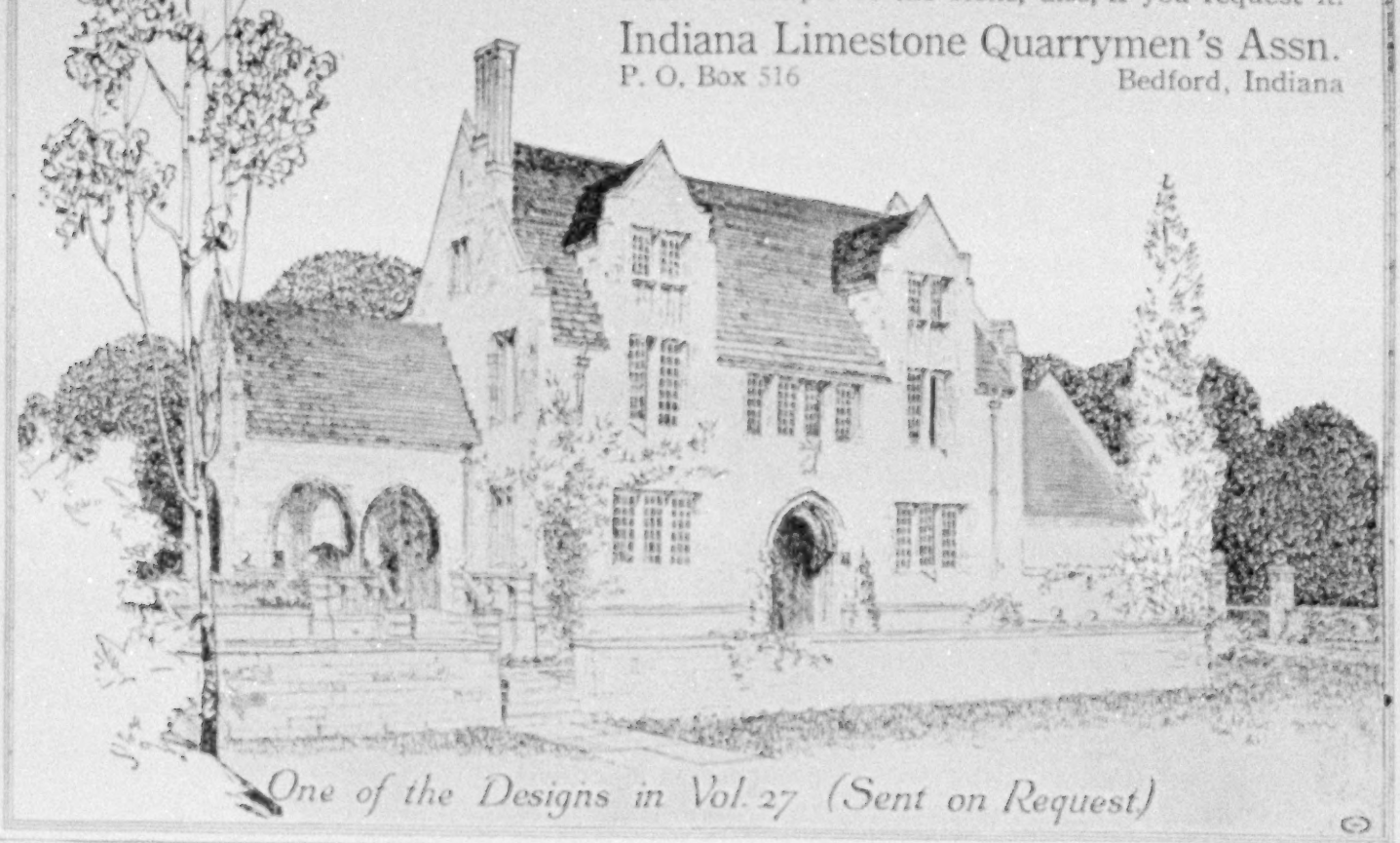

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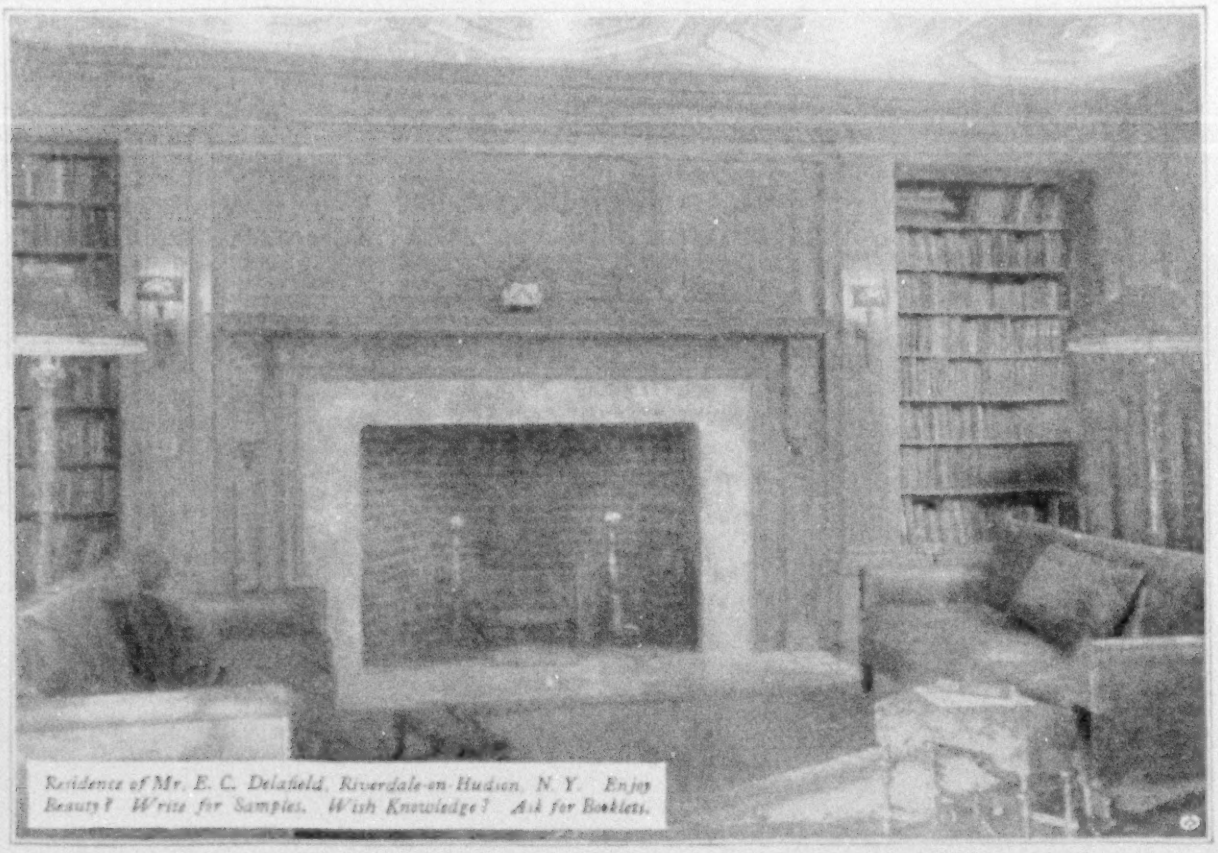

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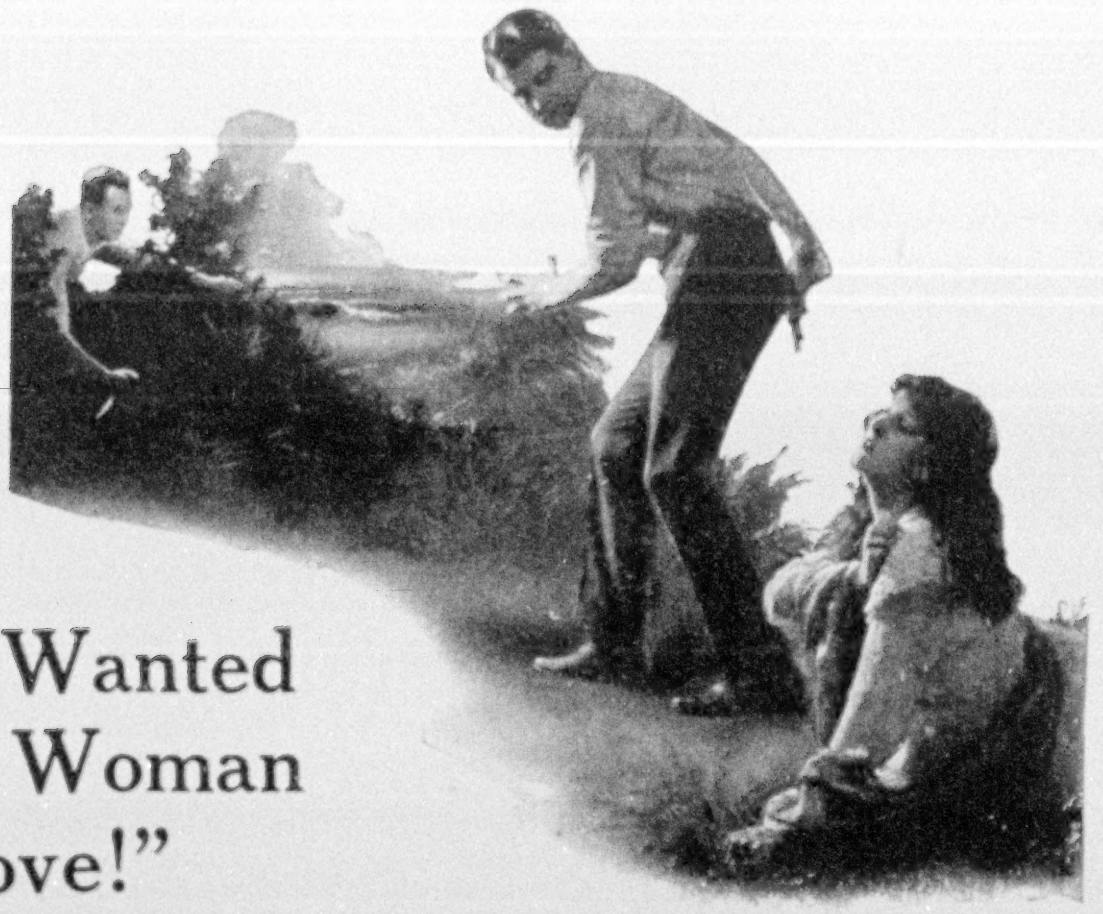
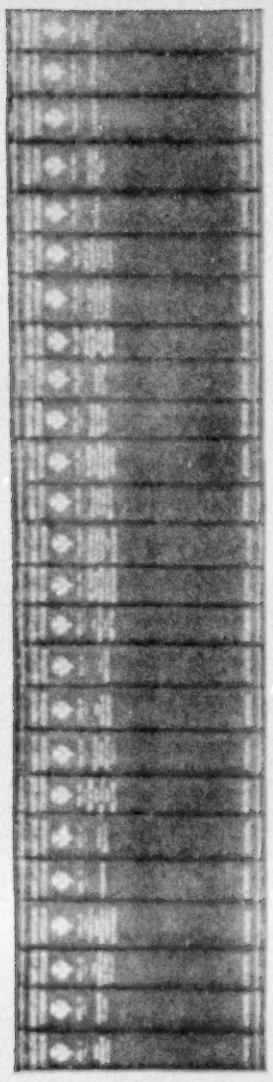


# "He Wanted the Woman I Love!"

"I heard a shot—I saw him run—and then I saw her fall—the woman I loved. My leg was broken—and my gun was gone! I had only one thought—his strange, astounding plots must be revenged—he must die for a coward at my hand! He had the courage of a lion and the cunning of a rat. He came running toward me when, suddenly—I—"

But the story is too thrilling—too fascinating, as he tells it, for us to spoil it for you here—for it is told by the man who knows how to make a story the most breathless thing in the world—Robert Louis Stevenson.



Wild, bleak cliffs of Scotland—raging stormy seas—England—America—interesting, mysterious South Sea Island! They are all caught in his pages. All over the world he takes you with the splendid magic of his pen! But he loved the South Sea Islands best—and, better than any other writer, he knows their glowing, passionate stories. Out of the dull everydayness of life he lures you, breathless, into his tales of fights, wild schemings, mutinies, plots, shipwrecks, duels—into the place we all of us love best, the land of irresistible Romance.

And it was America who first discovered him—America who proclaimed him! That was because his spirit was the kind to thrill every true American—because he has put that spirit into his books, because they fascinate the gentlest woman and the bravest man alike, and today Americans love him best of all. They read him more than they ever did before.

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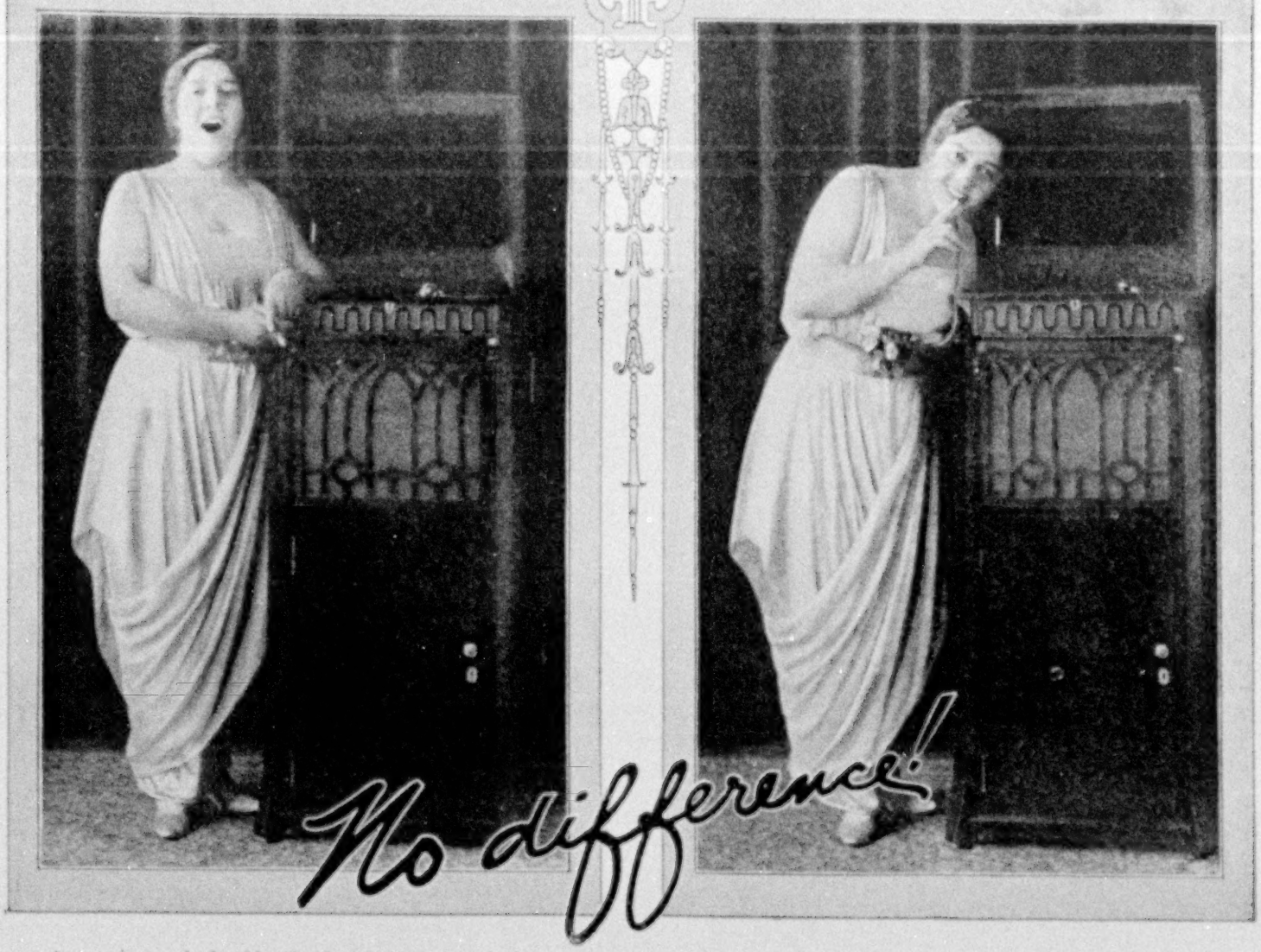


Lazzari stands beside the New Edison and sings "Mon coeur s'ouvre a ta voix"

Lazzari has now ceased to sing, and the New Edison is singing the same song alone

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The pictures on this page are from actual photographs. They show Lazzari in the act of comparing her voice with its RE-CREATION by the New Edison. She sang. Suddenly she ceased to sing, and the New Edison took up the same song alone. There was *no difference*. It was only by watching Lazzari's lips that the audience could tell when she had ceased to sing.

Lazzari has made this test before more than ten thousand music lovers and representative music critics. This test proves beyond all question that the voice of Lazzari, as RE-CREATED by the New Edison, is absolutely indistinguishable from her voice as heard on the stage of the Metropolitan Opera House

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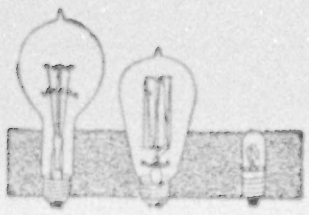

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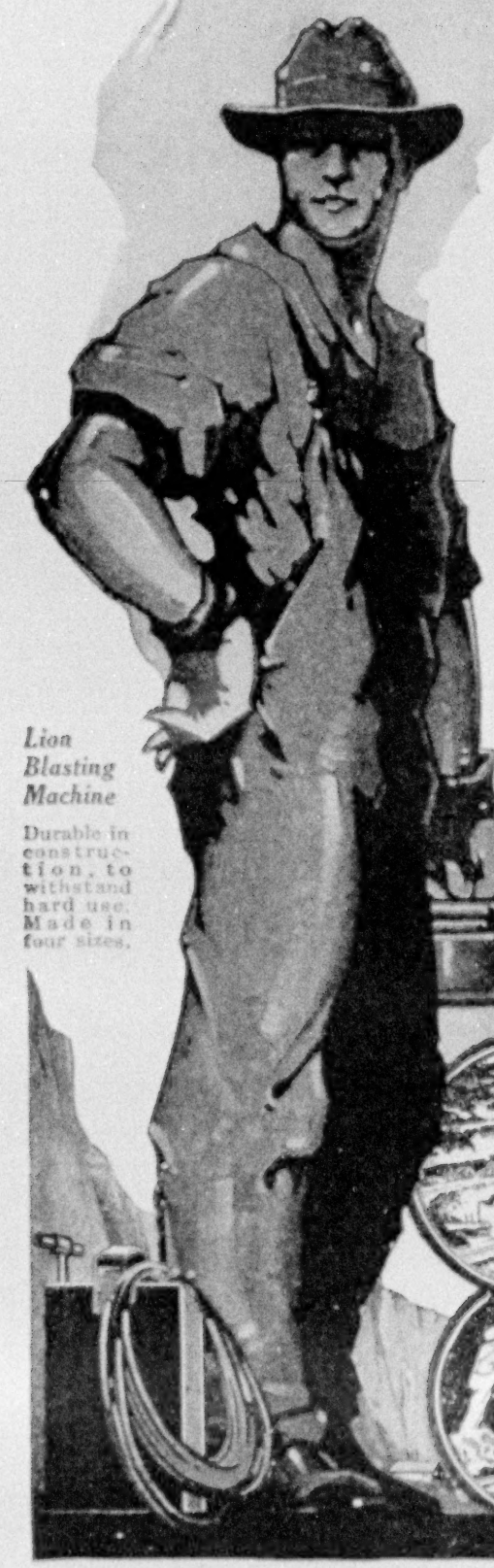

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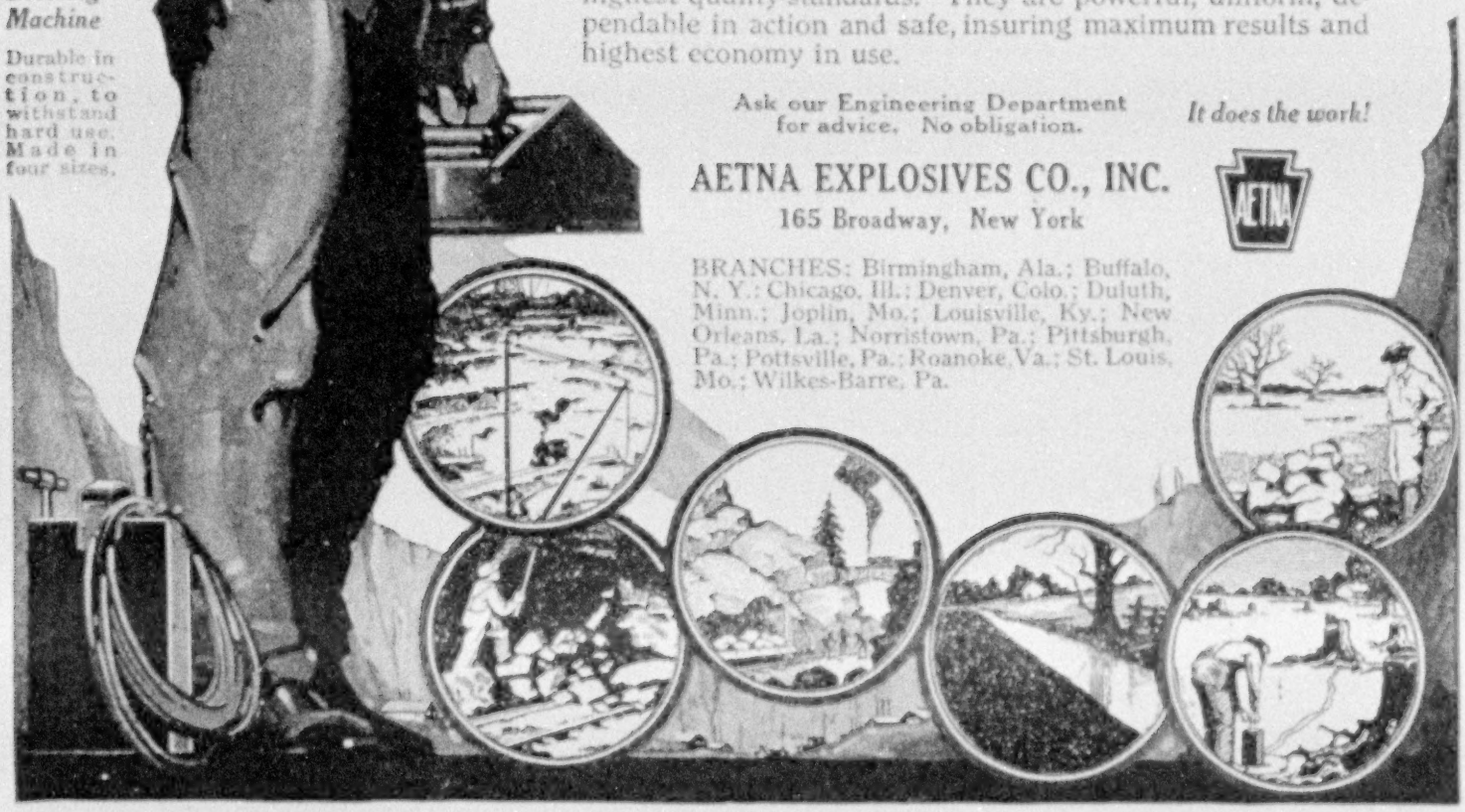

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## That Destroys Your Teeth

*All Statements Approved by High Dental Authorities*

### Hidden in the Film

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The film on your teeth—that slimy film—holds the food substance while it ferments and forms acid. Then it holds the acid in contact with the teeth to cause decay.

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India leads on to China, Tibet, and Japan. The Philippines beckon with busy loom and terraced rice fields, and Australia shows her riches. Then home again with forty of the finest views from our own country of inexhaustible wealth and beauty. The twenty-three pages in color include among others, Japanese and Russian children in costume, The Taj Mahal, The Nile, and the Great Pyramid,—each a marvel of color and beauty.

To avoid disappointment, order this volume at once.

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16TH AND M STREETS, WASHINGTON, D. C. .....1919

Please send.....copies of the Fourth Series "Scenes from Every Land," bound in.....for which I enclose herewith.....dollars.

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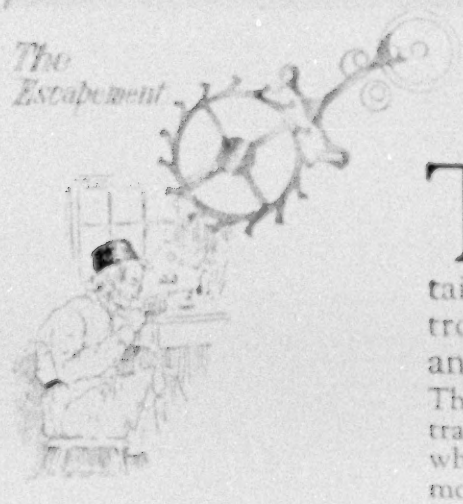
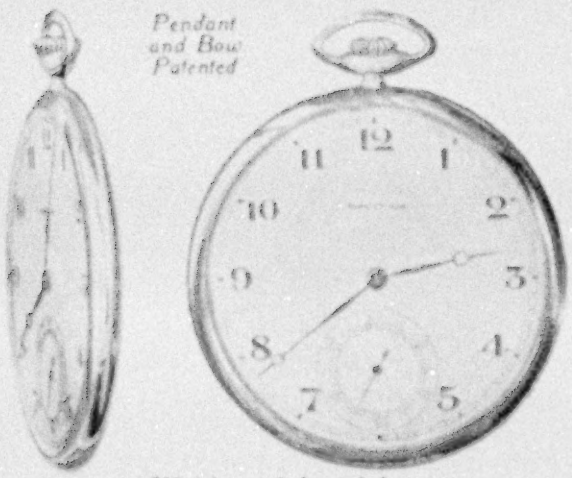
# WALTHAM THE SCIENTIFICALLY BUILT WATCH AND THE FOREIGN BUILT WATCH




**Waltham Colonial A**

Extremely thin at no sacrifice of accuracy
Maximus movement 21 jewels
Riverside movement 19 jewels
$150 to $275 or more
depending upon the case

## Information to Protect You in Buying a Watch

THE escapement is the heart of a watch. Just as the heart pumps or pulsates the blood through the human body to maintain life and energy, so the escapement controls the power generated by the mainspring and transfers it into elements of time.

The Waltham watch escapement controls the power transmitted from the mainspring through the train wheels to the balance wheel, which, in turn, divides the motion into intervals of time, pulsating 18,000 beats per hour—and this pulse beat is recorded on the dial by the hands.

The escapement consists of the escape wheel, two pallet stones set in the pallet, and a fork, a roller and a roller jewel. The purpose of the pallet and two pallet stones is to stop and release the escape wheel at the end of the train, at equal time intervals of about one-fifth of a second.

The Waltham escape wheel has exclusive features. For instance, the most important part of the escape wheel is the impulse surface. In the Waltham watch this impulse surface is trued by a diamond-cutting tool, which not only cuts it to absolute exactness, but gives it the high polish required by the Waltham standard of quality at the same time.

In the foreign-built watch the impulse surface of the escape wheel is polished with a compound by hand, which invariably charges the surface with cutting pigments that practically defeat the vital reason for polishing, and is, therefore, detrimental to the component mechanism.

This is one of the most important and one of the many reasons why you should insist that your watch be a Waltham.

*This story is continued in a beautiful booklet in which you will find a liberal watch education. Sent free upon request.*

# WALTHAM

THE WORLD'S WATCH OVER TIME

"Mention The Geographic—It identifies you"

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# League of Nations In a Typewriter

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**"Many Typewriters in One"** Because the Type is **Instantly** Interchangeable

Types for all purposes

*and for all languages*

Spacing to suit size of type

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Automatic Type Impression

All on one MULTIPLEX

However many Nations are eventually recognized, and taken into a League, there is a typewriter that can write the language of each and every one, the—

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*Standard "Writing Machine"*

—the typewriter upon which the first covenants for a League of Nations were drawn up—the typewriter that the Press of the Nation refers to as "President Wilson's Closest Confidant."

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With the Multiplex *you can put emphasis when and where you want it—literally making your writing talk.* That's why lecturers, lawyers, clergymen, authors, and business men who realize the value of *personality in writing*, use the Multiplex. In fact, this versatile machine often makes a man's writing more forceful than his speech.

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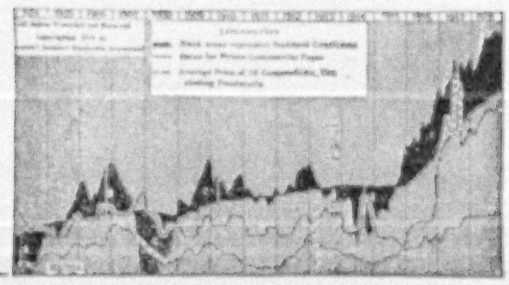

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*Write for Bulletin 1346 of the*

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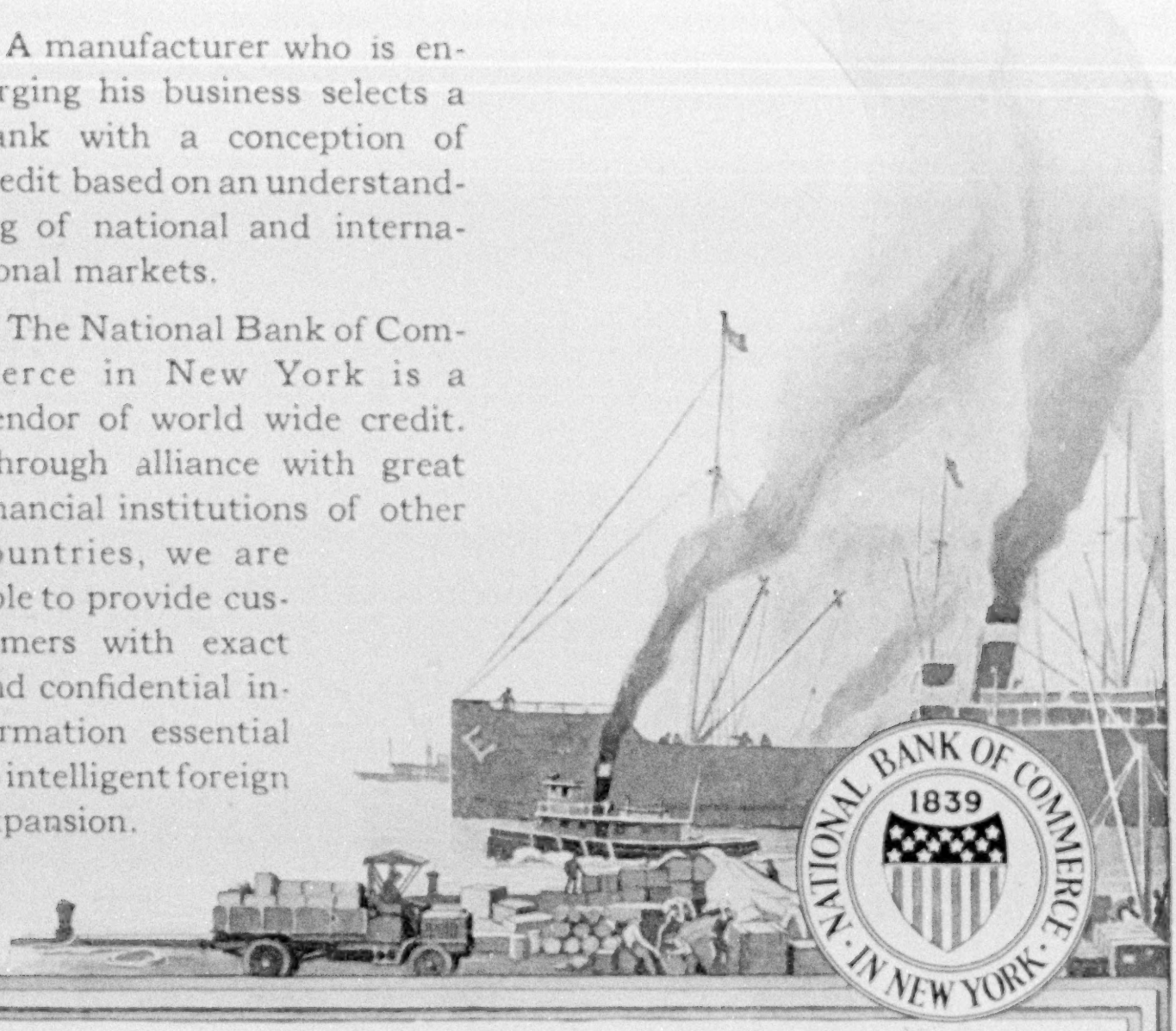
The National Bank of Commerce in New York is a vendor of world wide credit. Through alliance with great financial institutions of other countries, we are able to provide customers with exact and confidential information essential to intelligent foreign expansion.

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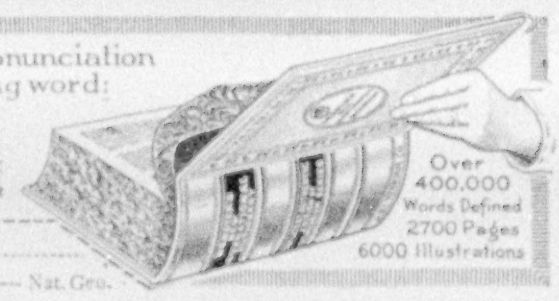


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As she locked the last door a horrible thought came to her—suppose a fire should start?

With a one cent post card you might save many lives from fire. Send today for our booklet. See below.

# Barred windows, locked doors

THE new officer of a girls' reformatory in a Middle Western State was very young and she hadn't learned that one must wait for the public to wake up to the cry of humanity.

So she made the first night's rounds in her corridor with a hopeful heart, glad that she had her chance to help these unfortunate girls. She looked into each little room with its barred window, saw that each girl was "safe" and locked the door behind her.

Locked in! Windows barred! Suppose a fire should start?

She put the question to the superintendent, an earnest woman of unusual capability, and learned that similar conditions exist in such buildings all over the country. They exist in asylums for the insane, prisons, houses of correction, etc.

The common dictates of humanity, you think, must provide some sure and certain means of putting out fire as soon as it starts.

But the trouble is that the officers in charge, who realize the danger, are generally without influence to secure any such equipment.

Only automatic protection like the Grinnell Sprinkler System can protect the inmates of training schools or penal institutions where locked doors, of necessity, prevail. Night and day the little sprinkler head is on the watch, ready to find fire, put it out, and send an alarm—all automatically.

Where the inmates must depend on the presence of mind or heroism of some officer who carries the keys, you may be sure that death by fire will be faced by some victims sooner or later.

Some five billion dollars of business property has been protected from fire by automatic sprinklers.

Meanwhile our wonderful humanitarian institutions and our fine schools continue to burn and the toll of victims grows larger each month.

With a one cent post card you might save lives. Who knows? Should you hesitate to send for a free booklet that tells what to do?

Read—"Fire Tragedies and Their Remedy"

If you feel too indifferent to send for a free booklet telling what to do, what right have you to blame others when a horrible calamity occurs in your town? Think of your schools, hospitals and asylums and write today, now, for this intensely interesting booklet. Address General Fire Extinguisher Company, 293 West Exchange St., Providence, R. I.

GRINNELL

AUTOMATIC SPRINKLER SYSTEM

*When the fire starts the water starts*

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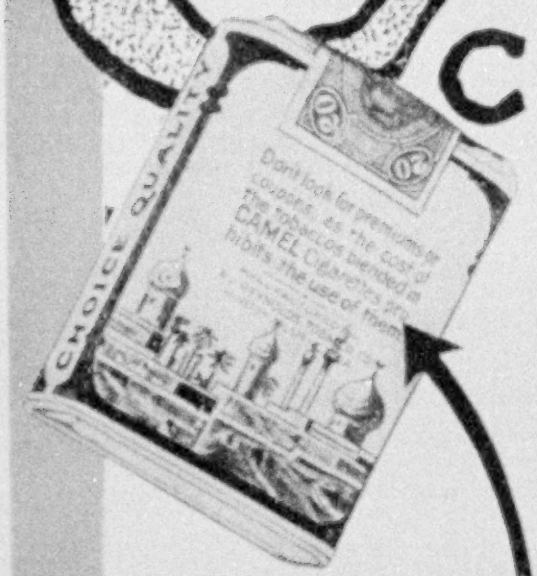
*18 cents a package*




*Smokers realize that the value is in the cigarettes and do not expect premiums or coupons!*

*Camels are sold everywhere in scientifically sealed packages of 20 cigarettes or ten packages (200 cigarettes) in a glassine-paper-covered carton. We strongly recommend this carton for the home or office supply or when you travel.*

Camels supply cigarette contentment beyond anything you ever experienced! You never tasted such full-bodied mellow-mildness; such refreshing, appetizing flavor and coolness. The more Camels you smoke the greater becomes your delight—*Camels are such a cigarette revelation!*

Everything about Camels you find so fascinating is due to their quality—to the expert blend of choice Turkish and choice Domestic tobaccos. *You will prefer this blend to either kind of tobacco smoked straight.*

You'll say Camels are in a class by themselves—they seem *made to meet your own personal taste* in so many ways!

Freedom from any unpleasant cigaretty aftertaste or unpleasant cigaretty odor makes Camels particularly desirable to the most fastidious smokers. And, you smoke Camels as liberally as meet your own wishes, for they never tire your taste! You are always keen for the cigarette satisfaction that makes Camels so attractive.

*Compare Camels with any cigarette in the world at any price!*

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# *Her Mouth Is Growing Old*

STILL YOUNG—but her mouth is growing old. The pretty lips are losing their youthful contour. They are taking on the look of withered age.

"Pyorrhea," says her dentist. A long neglected case. The gums are shrunken and receding—the teeth loosening, and decaying fast.

Pyorrhea is a preventable disease. Take proper care of your gums and teeth and you will not have it.

Forhan's for the Gums will prevent Pyorrhea—or check its progress, if used in time and used consistently. Ordinary tooth pastes and powders cannot do this.

If you have tender, bleeding gums (the first symptom of Pyorrhea) start to use Forhan's immediately. Then watch that bleeding stop, and the tenderness disappear.

But better still, don't wait for symptoms. End the trouble before it begins. Keep Pyorrhea, its disfigurements and train of dangerous ills away by using Forhan's for the Gums. It makes the gums firm and healthy—the teeth white, and clean.

### How to Use Forhan's

Use it twice daily, year in and year out. Wet your brush in cold water, place a half inch of the refreshing, healing paste on it, then brush your teeth *up and down*. Use a rolling motion to clean the crevices. Brush the grinding and back surfaces of the teeth. Massage your gums with your Forhan-coated brush—gently at first until the gums harden, then more vigorously. If the gums are very tender, massage with the finger, instead of the brush. If gum-shrinkage has already set in, use Forhan's according to directions and consult a dentist immediately for special treatment.

35c and 60c tubes in the United States and Canada. At all druggists.

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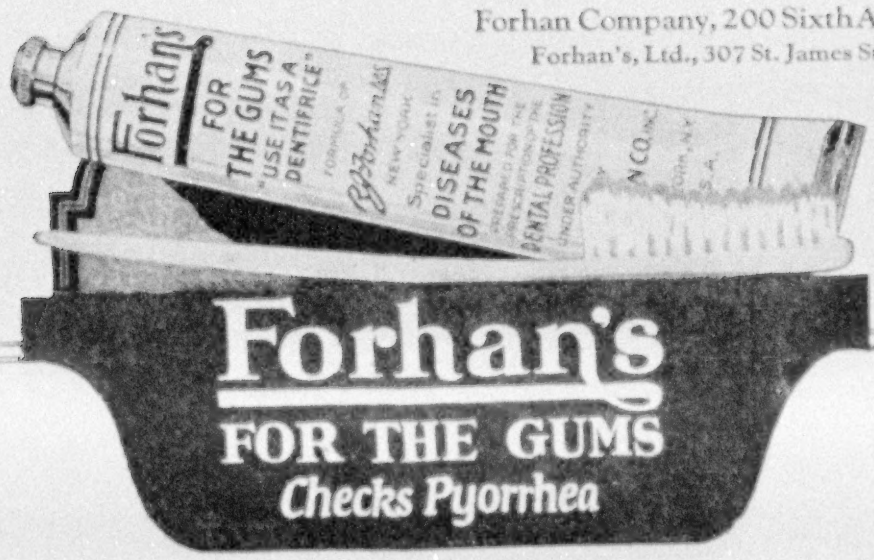


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Valuable as a lotion in eruptive or irritated conditions of the skin.

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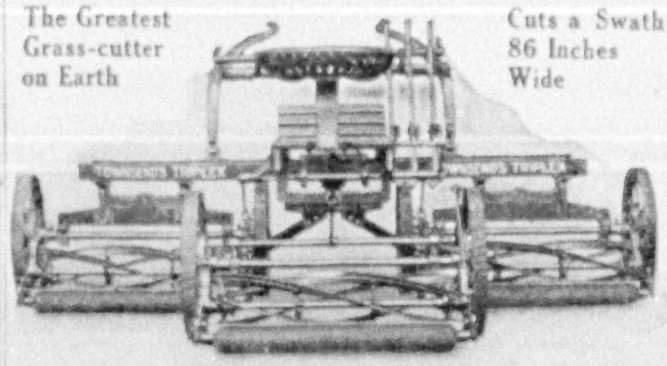
Cuts a Swath 86 Inches Wide



## Floats Over the Uneven Ground as a Ship Rides the Waves

One mower may be climbing a knoll, the second skimming a level, while the third pares a hollow. Drawn by one horse and operated by one man, the TRIPLEX will mow more lawn in a day than the best motor mower ever made; cut it better and at a fraction of the cost.

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Does not smash the grass to earth and plaster it in the mud in springtime, neither does it crush the life out of the grass between hot rollers and hard, hot ground in summer, as does the motor mower.

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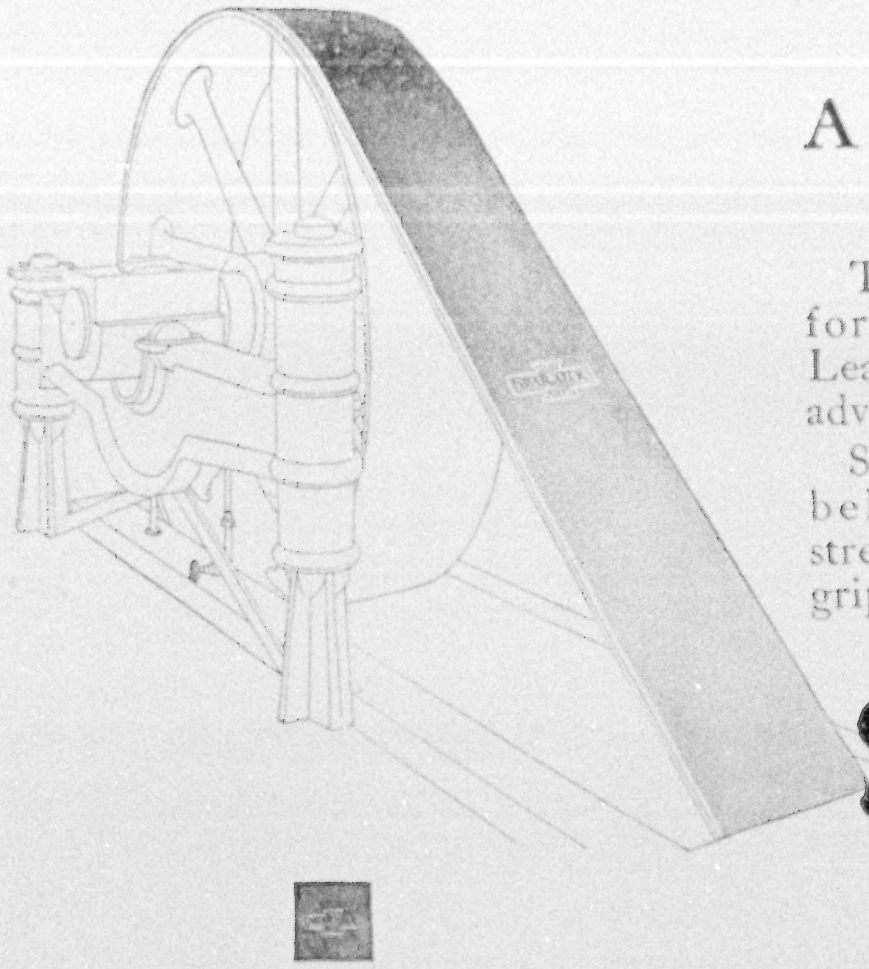

The picture shows an 18 in. SparOak Belt driving a beater in a paper mill—hard duty in a warm, moist atmosphere. SparOak is the answer to a great many perplexing belt problems, saving power and standing up under the most severe conditions.

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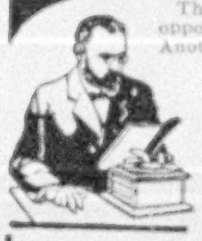

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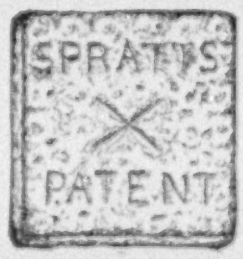


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We have done a mail-order fish business for thirty years, sending the goods RIGHT TO OUR CUSTOMERS' HOMES, EXPRESS PREPAID EAST OF KANSAS, and guaranteeing complete satisfaction or money refunded.

If you are interested in good fish, won't you drop us a postal that we may send you further information?

Our SALT MACKEREL are tender, juicy fellows—broiled for breakfast they are delicious. SALT CODFISH selected and prepared by our method is unexcelled.

Much of the fresh fish you buy in the market is at least several days old. OUR CANNED FISH, being STEAM STERILIZED, is ABSOLUTELY FRESH.

Our FRESH LOBSTERS, in parchment-lined cans, go through no process except boiling (no preparation of any kind being used). Opened and packed solid in whole pieces as soon as taken from the water, they retain their crispness and natural flavor. CRABMEAT, SHRIMP and CLAMS have likewise a perfectly natural appearance and taste.

Our SALMON, TUNNY and IMPORTED FISH DELICACIES are always the best produced.

A selection of our FISH PRODUCTS should always be in your STORE-ROOM for daily use and for the preparation at a moment's notice of dozens of dainty or substantial dishes.

Send for Descriptive Price List

Frank E. Davis Co., 296 Central Wf., Gloucester, Mass.

"Mention The Geographic—It identifies you"

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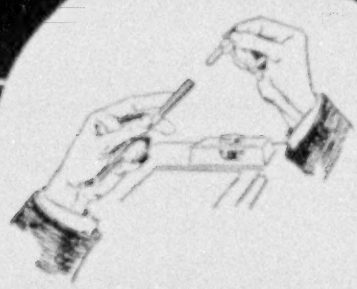

# "like putting a new pen in a pen-holder"

That is a simple thing to do—but no easier than renewing your Colgate's "Handy Grip" Shaving Stick. The soap is threaded and screws into the metal "socket." When it is nearly gone, *unscrew* the stub and screw in a "Refill" stick. You can buy this all threaded to fit—for less than the cost of a complete "Handy Grip," and you save the price of a new metal box.

Some men still prefer to shave with a Cream though it is the least economical way. To these men, this friendly word: Clip this paragraph and mail it to us before Nov. 15, 1919. We will send you, free, a trial tube of Colgate's Perfected Shaving Cream. You cannot be sure you know the best till you have used Colgate's. But we give you the impartial advice to use the "Handy Grip" as the most convenient and economical way to shave. We *can* do this impartially, as we make all three forms of shaving soap—Stick, Powder, and Cream.

Wet the old stub and press it on the "Refill"—it sticks. The "Refill" saves you the cost of a new metal box.

COLGATE & CO., Dept. 66, 199 Fulton St., New York

COLGATE'S

"HANDY GRIP"

PATENTED 1917

**The only Refill Shaving Stick**

PRINCE ALBERT certainly will put some frolic into that pet pipe of yours! To pack that joy'us old jimmy brimful or roll a makin's cigarette and hit'er up a notch or two is just going right over the top with your eyes wide open!

What P. A. will do for your taste and tongue you sure ought to know! Like the gentleman from Sparrow's Point you'll call P. A. a good egg! You'll smoke a pipe full and talk a bucket full—Prince Albert is such a great, big bunch of smokesunshine!

You'll quick catch the P. A. cue that it can't bite or parch; that Prince Albert's exclusive patented process frees it from bite and parch! And makes the sky the smoke limit!

Give Prince Albert high pressure for flavor and fragrance! Put P. A. through your little old taste-test-mill—and—just let that q-u-a-l-i-t-y percolate into your smokesystem! *You'll say it is!*

R. J. REYNOLDS TOBACCO CO., WINSTON-SALEM, N. C.

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# PRINCE ALBERT

*the national joy smoke*

*You buy Prince Albert everywhere tobacco is sold. Toppy red bags, tidy red tins, handsome pound and half pound tin humidors—and—that classy, practical pound crystal glass humidor with sponge moistener top that keeps the tobacco in such perfect condition.*

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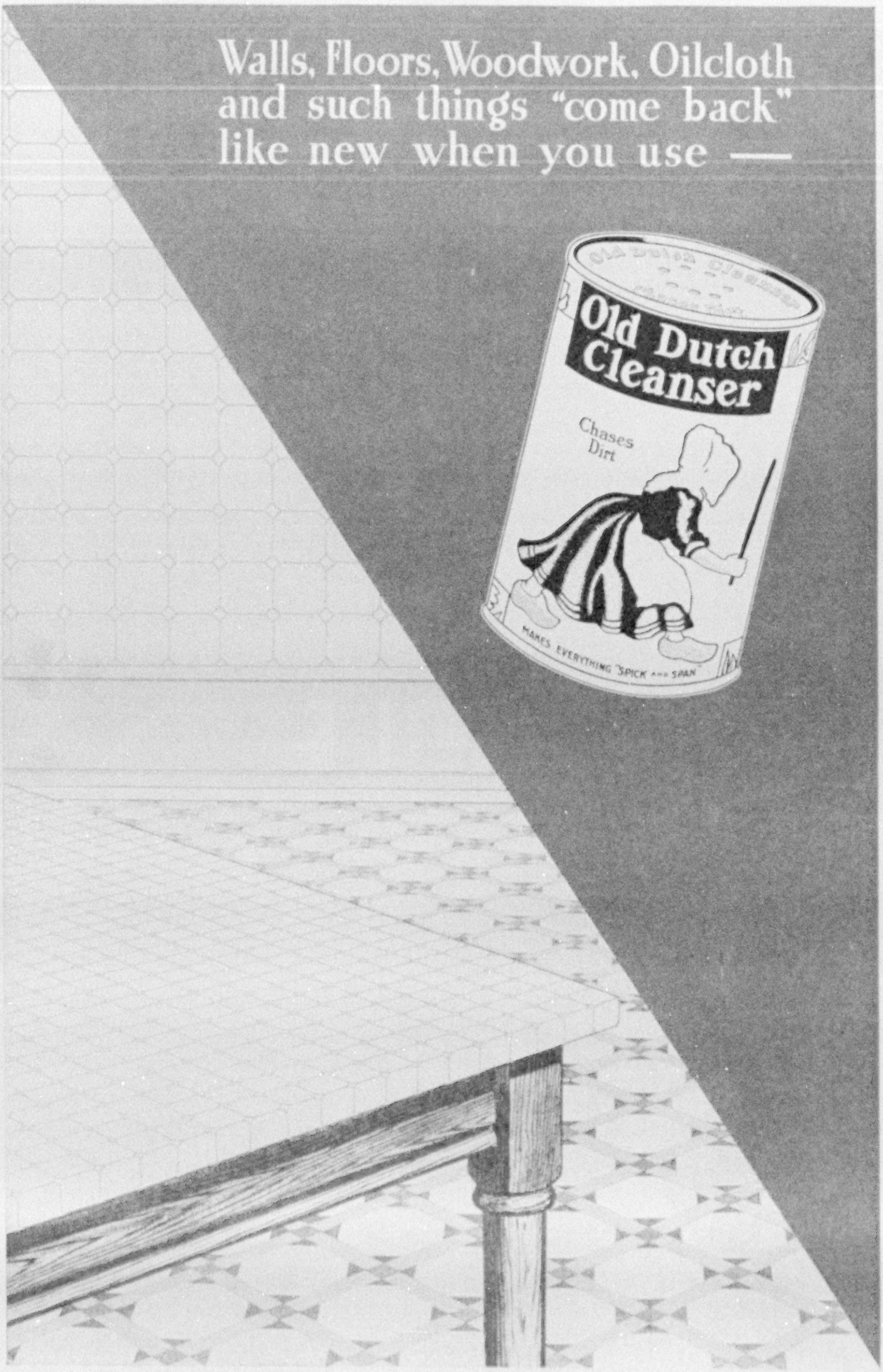
Walls, Floors, Woodwork, Oilcloth
and such things "come back"
like new when you use —